

**Industrialisation of Ghaziabad District
(A CASE STUDY)**

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BY

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C E R T I F I C A T E

This is to certify that the enclosed Thesis entitled "Industrialisation of Ghaziabad District (A Case Study)", embodies the work of the candidate, Shri Vijay Kumar Goel himself and that he worked under my supervision to complete his study for the period required under Ordinance 6. It is further certified that he has put in more than 200 days of attendance at the Giri Institute of Development Studies, a recognised centre for Ph.D. of the University, to work under my supervision.


T.S. Papola

November 28, 1983

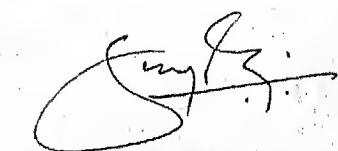
P R E F A C E

The pace of industrial activity in an area is seem to be a function of its natural resource endowment, extent of agricultural development, the level of development of adjoining areas, and the structure of industrial units in terms of potential for inter-industry linkages. Ghaziabad is one of those districts where the process of industrialisation has gathered momentum at a fairly rapid pace in the course of the last two decades. The present study was thus aimed at trying to identify the possible reasons that were instrumental in making Ghaziabad a suitable site for industrial location and fast pace of industrial development. The findings, it is hoped, should prove of interest not only to academicians but to policy makers as well.

I am deeply indebted to Dr. T.S. Papola, my Research supervisor, without whose expert advice, wise council and constant inspiration it would not have been possible for me to undertake and complete this work.

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(Vijay Kumar Goal)

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Chapter I

**INTRODUCTION : APPROACHES TO INDUSTRIALISATION
AND THE PRESENT STUDY**

1.1. The Industrialisation Process

✓ Industrialisation is a wide ranging process. It implies not merely development of certain industries, but certain basic changes in the structure, technology and organisation of economic activity. Industrialisation has been described, by the League of Nations, as meaning utilisation of power, machine, latest techniques, organisational methods and capital investment on a larger scale including divisibility of labour and development monetary system of goods and commodities.¹ Thus the process of industrialisation is not confined to manufacturing industry alone, it is a process through which the entire economic structure of a country undergoes change in its various aspects.

Further, industrialisation not only encompasses the entire gamut of economic activity, but has its impact on the social organisations, relations and attitudes. Within the sphere of economic activity, however, it can be described more specifically as 'a process in which changes of a series of strategical production functions take place, following from such phenomenon as mechanisation of an enterprise, the building of a new industry, the opening of a new market and the exploitation of a new territory. Thus industrialisation,

¹ League of Nations, 'Industrialisation and Foreign Trade', Economic and Financial Transit Department, Geneva, 1945, p.10.

in a way involves the process of both deepening and widening of capital.²

Industrialisation, therefore, leads to increase in productivity as a consequence of changes in structure as well as through more intensive use of the given resources. Increased amounts of capital are employed per unit of output and this process is described as capital deepening while the growth of capital formation together with increase in output and final goods is termed as capital widening. Association between industrialisation and the high productivity lead to high average incomes. It is widely acknowledged that industrialisation and high productivity are parts of an inter-linked process; one does not proceed very far without the other. It is equally true to say that high productivity produces industrialisation and that industrialisation produces high productivity.

1.2. Case for Industrialisation in the Under-developed Countries

Under-developed countries (UDC's) characterised by low levels of real income and capital per head of population,

² Chang, P.K., Agriculture and Industrialisation : The Adjustments that takes place as an Agricultural Country is Industrialised, Cambridge (Massachusetts), 1948, p.69.

by the standard of North America, Western Europe and Australia,³ are also the less industrialised countries of the world. In fact, quite often the under-developed/developing - developed country classification, is treated interchangeable with non-industrialised - industrialised country dichotomy. To day, since most under-developed countries are, in fact, developing, therefore, it is more apt to characterise them as 'industrialising' rather than non-industrial countries.

The impetus to industrialisation in today's developing countries stems from the difficulties of colonial and semi-colonial countries in the 1920's when terms of trade for primary products began to deteriorate and employment problems were experienced in some countries. In the late 1940's the price of manufacturing products began to rise and terms of trade seemed to be turning against primary products. At the same time, development demands and the per capita income gap between agriculture and industrialised countries began to widen. The balance of payment pressure led to the emergence of import and exchange restrictions and to a protection market for local industry. Thus import substitution with high protection became the principal industrialisation strategy.

³ Bauer, P.T., and Yamey, B.S., The Economics of Under-developed Countries, Cambridge University Press, 1965, p.3.

Under-developed countries differs from developed countries in two major factors on the eve of their industrialisation. The first of these is very presence of the industrialised countries and industrial technology which exists is immeasurably greater than in the 19th century. The market available for the industrial products of under-developed countries are radically different from those which faced industrialising countries in the 19th century. The nature of world competition and finance and relatively more advanced technology also imply differences in the opportunities for industrialisation. Secondly, as a consequence of the rapid growth of population many times faster than in the today's industrialised countries at the time of their initial industrialisation, it could be much longer after the begining of industrialisation that the balance in employment between agriculture and industry is shifted. Hence, the role of the agriculture and industrial sectors in economic development of today's developing countries cannot be the same as in 19th century Europe.

1.3. Need and Significance of Industrialisation

The most pressing need of developing countries is for a rapid industrialisation for achieving the basic objectives of their economic and social progress. It has been recognised that industrialisation is the surest solution to the problem of raising the standard of living of the people.

The example of Soviet Union has now proved that rapid industrialisation in under-developed lands can be a short cut to the goal of achieving the objectives of economic development. The need for industrialisation in the under-developed countries has also been recognised by the advanced countries and they have started a crusade against poverty in these countries by helping them in their efforts for industrialisation.

As a result, most of the under-developed countries are today following the thesis that, "industrialisation is a process of growth and as such is organically linked both to the social and economic past and to parallel processes of social and economic development."⁴ At the same time, it is recognised that industrialisation is not the synonymn to the process of economic development; it is only a part of the much broader process of economic development which involves the raising of standards of living through a steady increase in the efficiency of factors of production.⁵ It is, however, universally recognised that industrialisation is a necessary condition for this process.

⁴ U.N: 'Process and Problem of Industrialisation in Under-developed Countries', 1955, p.10.

⁵ Ibid., p.10.

Economists like Colin Clark have pointed out that economic growth is positively correlated with the proportion of working population engaged in the secondary and tertiary sector, and low per capita income is associated with high proportion of population engaged in the agricultural sector. The economic growth, therefore, entails the movement of resources from a low productivity sector - agriculture to a high productivity sector - industry.⁶

In India, the significance of industrialisation was summed up by late Pt. Jawahar Lal Nehru, in these words, "real progress must ultimately depend on industrialisation."⁷ The ideology of industrialisation in South Asia has been reinforced and solidified, as Myrdal states, by two trends, viz., deteriorating world market for primary products, and increasing aspiration for rapid economic development. For them further concentration on primary commodities for export is considered to be futile. This is why poor nations began to realise that their position can be improved only by adoption of modern techniques.⁸ Professor Gunnar Myrdal has rightly described the relationship of industrialisation and

⁶(i) Clark, C., 'The Conditions of Economic Progress', The Macmillan & Co. Ltd., London, 1957, pp.496-97; (ii) Lewis, W.A., 'The City, The Factory and Economic Growth', American Economic Review, Vol.XIV, 1955.

⁷ Nehru, J.L., 'Speeches', March 1953-August 1957, New Delhi, 1958, p.11.

⁸ U.N: 'A Report of Special United Nations Fund for Economic Development', New York, 1954.

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economic development and writes : "The manufacturing industry represents, in a sense, a higher stage of production in advanced countries. The development of manufacturing industry has been concomitant in these countries, with spectacular economic progress and rise in the level of living, not least in the under-developed countries, the productivity in industry tends to be considerably greater than in the traditional agricultural pursuits."⁹ Economic development through industrialisation is sought, therefore, "not only as a means of strengthening the nations but also as a means of bringing about a shift of power within the under-developed nations."¹⁰

144. Objectives of Industrialisation

In the context of the developing economies few specific objects of policies of industrialisation have been generally agreed to by the planners. To quote Mr. Alan B. Mountjoy : "The three customary objects of industrialisation policies are to provide work for growing population, to raise the standard of living by increasing the per capita net national income and often to improve balance of payments situations."¹¹

⁹ Gunnar Myrdal, An International Economy, London : Routledge & Kegan Paul, 1956, p.226.

¹⁰ Alexander, R.J., A Primer to Economic Development, The Macmillan & Co. Ltd., London, 1962, p.3.

¹¹ Mountjoy, A.B., Industrialisation and Under-developed Countries, Hutchinson University Library, London, 1963, p.63.

Under-employment, un-employment and poverty are the usual features of the under-developed economies. A large part of labour force in the agricultural sector is disguisedly unemployed. The problem of unemployment is further accentuated by the increasing pressure of population in the under-developed countries. In such cases, according to Mountjoy, "industrialisation to provide work for growing population is the only solution."¹² In densely populated country like India, where, almost 70 per cent population has remained agricultural, industrial progress can provide an alternative source of employment. Industrial development will be able to absorb rural population which is either under-employed or unemployed without reducing total agricultural output.¹³

Economic development is conceived as a relative decline in the proportion of those engaged in agriculture. As economic development proceeds, the occupational distribution changes in such a manner that at each successive stage, it leaves relatively a less proportion of working force in agriculture than before; industrial employment expands as

¹²Mountjoy, A.B., Industrialisation and Under-developed Countries, Hutchinson University Library, London, 1963, p.61.

¹³U.N.: ECAFE, Economic Bulletin for Asia and Far East, Vol.XII, No.3, 1961, p.12.

the agricultural employment shrinks. Industrialisation brings about a transformation of the economy through a change in its structure in respect of both inter-sectoral and intra-sectoral employment and income.

Greater reliance on foreign sources for capital goods may jeopardise investment plans and result in unfavourable balance of payments. Along with the modernisation of agricultural and industrial sector, under-developed countries should also concentrate upon some export lines in which they can establish a good competitive position in the international market and reduces the dependence on imports. The under-developed countries now are generally aware that they can not rely on export of primary produce, because of the fear that the terms of trade in future will turn against them. Industrialisation may be a means to improve the stability of both the foreign exchange earnings and the national income through diversification of exports. The manufactured goods sold in foreign markets would serve to pay for the import of capital, equipment and even for the food imports, if required.¹⁴

The process of industrialisation has definite agglomeration and self-reinforcing quality. Once the industrialisation begins in a particular region, it tends to feed on itself.

¹⁴ South Worth, A.M. and Johnstone, B.F., 'Agriculture Development and Economic Growth', Cornell University Press, New York, 1967, p.37.

The exploitation of existing resources stimulates further increase in income and drawing additional factors of production in a beneficial circle of economic growth.¹⁵ Growth in income is generally accompanied by increase in the productivity of labour, and hence the per capita output. The increased output is usually accompanied by economies of scale due to rise in capital assets employed. Increased productivity of labour increases national output and the level of income; rising incomes are then expected to lead to higher rate of savings and thus further stimulate production, employment and investment in the economy, thus, further, raising the national income.

Industrialisation with superior technical know-how raises the level of wage share and thus living standards. Side by side with the application of latest technology, it will reduce the hours of working in the agriculture sector. The rapid development of organised industries in the process of industrialisation, not only stimulates the growth of small and village industries, but also helps in mechanising agriculture and thus accelerating its growth. Thus industrialisation is an aid to improving the productivity of agriculture. Production in the primary sector is likely to increase with

¹⁵ Kuchchal, S.K., 'Industrial Economy of India', Chaitanya Publishing House, Allahabad, 1965, p.116.

the industrial development. Demand for food-stuffs and raw-materials is likely to increase during the process of industrialisation.¹⁶

Industrialisation increases the demand for food, provides favourable large market for agricultural products and more important it creates employment opportunities, in secondary and tertiary sectors of the economy, for the surplus labour from agriculture and hence increases the marginal productivity of labour in agriculture and rise in wages.

However, over rapid and unbalanced growth of industrial sector, un-accompanied by complementary changes in the agricultural sector, may give rise to phenomena which in the long run are likely to retard economic development. For the successful economic development, a rise in agricultural productivity along with industrial development is essential.

Industrialisation also leads to development of technology. It enables a country to develop technical consciousness; greater part of growth of a particular country has been observed to be due to adaptability of advanced technology. Technical borrowing combined with increasing technical competence of labour-force was a major factor in Japanese

¹⁶ U.N: Process and Problems of Industrialisation in Under-developed Countries, Department of Economics and Social Affairs, New York, 1955, p.3.

economic development after the Second World War. New technology is welcomed as it economises production process by adopting new and more efficient techniques to utilise inputs.

1.5. Approaches to Industrialisation

No more than about 30 of the 150 or so countries in the world are industrialised. The first country to be industrialised was Britain, followed by some Western European countries and the United States and then later by Japan, the USSR and a few others. The road to industrialisation taken by different countries has been different. This has been so partly because of their political structure. Moreover, the countries that industrialised at a later stage had the experience of the earlier industrialised countries at their disposal. And their technologies were also available to them. Thus the very conditions under which different countries have set about on the course of industrialisation have been different in different countries.¹⁷ The most obvious of all these differences is the one between the capitalist and the socialist mode of industrialisation. The majority of countries which have industrialised did so under a capitalist system. The USSR is the only country to have fully industrialised successfully under socialistic system.

¹⁷ Sarille, J., 'Primitive Accumulation and Early Industrialisation in Britain', Socialist Register, 1959, p.268.

For industrialisation it has become almost universally accepted today that some form of economic planning is necessary, either it is capitalistic or socialistic. Obviously the forms of planning which are possible, differ according to the political system. Planning may not necessarily be done by the government alone. In many advanced capitalistic countries (USA for example) most firms do more planning than the government. Japan's industrialisation, however, was to a large extent the outcome of deliberate planning by a small group firms which cooperated with each other and with the government.¹⁸

Forms of industrialisation vary from country to country. According to the amount of initiative taken by government or private enterprise, industrialisation may be individual or private initiated, state initiated and jointly initiated (i.e. mixed economy). It is not easy to classify countries in above types because during the initial stage of industrialisation efforts of both government and individuals are involved. Allowing for a certain margin of error, England, United States of America and France may be grouped into the first type, Soviet Russia and China into the second and Germany, Japan and India into the third.

¹⁸ Smith, T.C., Political Change and Industrial Development in Japan, Government Enterprise, 1968-80; Patric, H.T., Japan 1968-1974 in R. Cameron, Banking in the Early Stages of Industrialisation; Lockwood, W.W., 'The Economic Development of Japan 1968-1938' (Chapter 10); Maddison, A., Economic Growth in Japan and the USSR, (xviii).

There has been a lot of controversy regarding the strategy, which an under-developed country should adopt in relation to the emphasis it lays on consumer goods or capital goods industries. Distribution of investment between capital and consumer goods industries plays a very important role in determining the nature of economic growth.¹⁹ In USSR, heavy investment in capital goods and 'basic industries' played a key role in the rapid economic development, and helped in laying the foundation for further development.²⁰ According to classical pattern of development, growth takes place, in the first instance, in the light industries of the resource based nature like - textile, food processing, leather and other consumer goods.²¹

In an under-developed economy it may be considered suitable to start from the light industries and gradually proceed to setting up of heavy industries, as for creating more employment, in the short-run, light industries are

¹⁹ Ezekiel, H., 'The Pattern of Investment and Economic Development', Bombay University Press, Bombay, 1967, p.1.

²⁰ Dobb, M., Economic Growth and Under-developed Countries, London, 1963.

²¹ U.N: Economic and Social Council, Financing of Economic Development : The International Flow of Private Capital, New York, 1953-55, p.9.

useful specially in the countries where, work force is in abundance while capital is scarce. Labour intensive techniques of production are assumed to be suited to the manufacture of light consumer goods, while capital intensive production is on large scale appropriate for the production of heavy capital goods. However, to rely on the import of the capital goods for a longer period by the under-developed countries, will not prove good for the economy. According to United Nations Report, with reference to Asia and far East, "despite the effort to promote economic development during the last decade and a half living standard in the most ECAFE countries continues to be extremely unsatisfactory and pace of improvement remains too slow. The possibility of accelerating economic growth is, however, constrained by several factors including the low rate of saving, difficulties of expanding exports and excessive dependence on import of capital goods."²²

The approach to industrial development in India is based on the Mahalonobis strategy laying emphasis on large investment in the capital goods sector to build the capacity for self-sustained development. Side by side, the production

²² U.N.: Sectoral Aspects of Long-Term Economic Projection with Special Reference to Asia and Far East, Bangkok, 1967, p.1.

of consumer goods has also been planned particularly in the small sector using labour intensive techniques. Special attention on the growth of capital goods producing sector has been envisaged in order to maximise the long term growth of the economy as a whole.²³ The strategy combined with measures of import substitution, and export promotion, in different combinations from time to time, has led to significant increase in the industrial capacity and production, with, of course, occasional set-backs and imbalances in the short run.

1.6. Factors and Problems in Industrialisation of a Relatively Less Industrialised Area

Industrialisation requires four broad categories of resources which embrace a large number of specific and different types of productive factors. They are - labour, management and entrepreneurship, capital and natural resources. Each region is endowed with these resources in varying degrees and each region has thus to adopt varying approach in terms of strategy and incentives for promotion of industries.

²³ Mahalonobis, P.C., The Approach of Operational Research to Planning in India, Asia Publishing house, Bombay, 1963, p.35.

In the under-developed countries, especially those who have a high growth rate of population — the excess of labour supply is a common feature. These countries are thus faced with the problem of severe unemployment and of disguised unemployment. In countries like India, for instance, more and more labour fall back upon agriculture where their marginal productivity is zero or even negative. Moreover, the labour force is mainly un-skilled. Industrialisation incorporates new technologies and accordingly requires some degree of skill in at various levels which is not easily forthcoming primarily because the level of education is rather low. Thus we are faced with the problem of having a surplus but unskilled labour force. With the introduction of the latest form of technology in the industrial sector the production process may tend to be capital intensive as a result of which the backlog of unemployment continues to rise till at least a particular level of development is attained. The increasing rate of growth of population has a further dampening effect on the situation.

Another important factor which plays a crucial role in industrialisation is entrepreneurship. Joseph Schumpeter has suggested that, private entrepreneurship has assumed the leading role in economic development. According to

Schumpeter, the role of entrepreneur is not as the capitalist or the manager. "It is the carrying out of new combinations of factors of production and constitutes the entrepreneur."²⁴ These new combinations include the development of new products, the opening of new markets and sources of supply and the introduction of new techniques of production.²⁵ In the developing countries, there is lack of entrepreneurship due to economic and political environment. Industrial entrepreneurs are short in supply because there are very few industrial enterprises. The economic structure also restricts the growth of private entrepreneurial ability. The existing industrial enterprises do not allow the potential local entrepreneurs to grow. Moreover, the large foreign owned industries using advanced technology do not provide sufficient impetus to the local entrepreneurs since their techniques are different and they already have invested heavily on the various overheads which is not possible in the case of indigenous entrepreneurs particularly during the early stages of industrialisation. Above all, these foreign enterprises, endowed with ready and cheaper source

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²⁴ Schumpeter, J.A., The Theory of Economic Development, New York, p.75.

²⁵ Ibid., p.66.

of capital and greater experience than indigenous entrepreneurs, have a clear competitive advantage. They easily take up available profitable opportunities and further restrict the local entrepreneurship.

The role of capital formation in industrialisation is very important and does not need emphasizing, especially when there is need to provide employment to vast unemployed force. Furthermore, the newer industrial techniques adopted by industries are becoming more and more capital intensive. The relative backwardness in the economic field as compared to the industrialised countries make capital formation more difficult. The low level of income in under-developed and less industrialised countries leads to little margin of savings and hence further investment. Moreover, due to industrial, political and social environment of less industrialised countries fails to transfer potential savings into industrial or other sectors of economy.

In the initial stages, industrialisation was largely affected by natural resources. In Britain, for instance, in the early stages of Industrial Revolution the availability of iron and coal determined the location as well as character of industrialisation. In some other countries,

where fertile agricultural land was in abundance²⁶ agriculture played an important role in the early stages of industrialisation. According to Sutcliffe "It is wealth of natural resource endowment which has enabled the Soviet Union and the United States to reach high levels of income per head with a lower ratio of international trade to national income than other countries."²⁷

Similarly the growth of the very small oil producing countries of Middle East is entirely due to the abundance of a single natural resource by virtue of which in a very short period they have achieved high national income per head. Most of the under-developed countries, those well endowed in natural resources, have become predominant producers of primary products. This, at times, may be to the disadvantage of the primary producing country and is generally reflected in the adverse terms of trade.

The importance of infrastructure, or social overhead capital as it is sometimes called, in the process of industrial development is unquestionably recognised. There is, however, some confusion regarding the extent to

²⁶ These Countries are : Australia, New Zealand, Canada and United States.

²⁷ Sutcliffe, R.B., Industry and Under-development, Addison - Wesley Publishing Company, London, 1971, Ch.4, p.11.

which it is a necessary precondition for development, and how far it is also a concomitant of development itself. In the process of state led development process an increasingly large part of it has come to be recognised as a precondition of development, while in economies operating basically on a market basis, a large part of so-called infrastructure was demand-induced and therefore, an accompaniment of development. Thus to say that infrastructure plays an important role in development sometimes becomes tautological to the extent the terms included in infrastructure are directly productive activities and, therefore, account for part of development themselves. Then, there are sectors and activities which directly help development of productive sectors. On the other hand, there are services which have an indirect relationship with productive activity. Thus infrastructure includes such sectors producing goods and services which serve as universal intermediaries to productive sectors and have externalities of very high magnitude. Transport and communication, power, financial and promotional institutions and social services such as education and health are the various facilities which encompass the general concept of infrastructure. The less developed countries are mostly characterised by rather undeveloped infrastructure, which

inhibits industrialisation, and have also limited capacity to undertake large investments required for development of these facilities.

1.7. Spatial Concentration

The process of industrialisation, at least in the early stages, tends to concentrate industrial activity in certain specific areas. Thus it is observed that certain centres get a big boost by way of industrialisation; while others lag behind causing regional imbalances in the level of industrial development. Concentration of industrial activity in certain centres or areas takes place due to chiefly to the existence of certain basic facilities such as presence or easy availability of raw materials, availability of infrastructure facilities like, developed means of transport and communication, power and water, presence of skilled, semi-skilled and unskilled labour force, existence of financial institutions and proximity to distributing and consuming centres. The tendency among entrepreneurs is naturally to flock to areas possessing these facilities.

Resource-base differs significantly among areas, and all areas are not therefore equally suited for the development of industrial activity. In the initial stages,

industrialisation proceeds to begin with, with resource based industries. Industries thus automatically tend to get concentrated in areas where the required raw material is easily and adequately available. Of course, industrial complexes are also seem to have developed in areas which had no initial resource based industries. But by and large, the initial industrialisation has concentrated in the resource rich areas.

Labour being a mobile factor, it may be presumed, that its availability or otherwise may not act as an important variable in industrial concentration. Yet, its importance is perceptible in two ways : One, the larger local availability of labour tends to reduce labour costs, thus encouraging entrepreneurs to locate their industries in the areas of abundant labour supply; and second, clustering of industrial units in an area tends to make supply of skills easier.

Infrastructure facilities play probably the most important role today in accelerating spatial concentration of industrialisation. A well developed transport network, availability of power and financial institutions and industrial estates as well as medical and health and educational facilities are crucially important in industrial development and these facilities are not equally

developed in all areas. They call for extremely heavy doses of investment and in the less developed countries it is not always possible to extend them over a number of areas at the same time. Industrialisation tends to get concentrated over areas where such infrastructure facilities are easily available.

Once industrialisation on a considerable scale gathers momentum in an area, due either to the availability of raw material, skills, infrastructure, or a combination of these factors, the process takes a cumulative form, leading to the establishment of either industrial units in existing or ancillary lines, to utilise the advantages of specific facilities of production or even in different lines of production, taking advantage of the general facilities and linkages developed in the area. In fact concentration and agglomeration becomes a self-sustaining process.

Industrial concentration may or may not have had local or regional market as an impetus, but it certainly leads to development of markets, mainly in the form of marketing net-works and information. An industrial entrepreneur today requires to keep himself well informed of the areas and the types of products that are in demand; and industrial concentration facilitates and economises availability of such information.

1.8. Planning for Industrialisation on a Regional Basis

India initiated the process of planning nearly three decades ago with the First Five Year Plan in April 1951. The main purpose of planning was identified as that of starting the process of development which will raise living standards and open up new opportunities for a richer and more varied life.²⁸ The manner in which the purpose was translated into specific objectives went on changing from plan to plan. However, in a broader sense the aim of economic planning in India has been to bring about a structural transformation of the economy so as to achieve a high and sustained rate of growth, a progressive improvement in the standards of living of masses leading to eradication of poverty and unemployment and provide the material base for a self-reliant socialist economy.²⁹ Development planning in its first decade, was primarily concerned with maximisation of economic growth. The scarcity of resources and the need to maximise

²⁸ Government of India, First Five Year Plan, Planning Commission, New Delhi,

²⁹ Government of India, Sixth Five Year Plan, Planning Commission, New Delhi, p.17.

productivity of investment made it imperative for the decision makers to concentrate development efforts at those points of the economy and those regions of the country where returns were likely to be the highest. As a result, there is no doubt that considerable progress was achieved in the economy in aggregative terms, but the objective of balanced regional development fell far short of achievement.

Therefore, in the Third Five Year Plan, balanced regional development was explicitly stated as a specific objective. The emphasis was primarily laid on industrial development for achieving this objective. Efforts were planned to develop climate for rapid industrial development, through such measures as development of infrastructure and development of small scale and cottage industries to raise private investment in industrial sector. The general measures such as development of social overhead capital led to acceleration in industrial growth, but their impact in the direction of achieving inter-regional balance was rather limited. One reason for this was that the planning processes was basically sectoral,³⁰ hardly any spatial element woven into it. The Fourth Plan, therefore, took

³⁰ Sectoral Planning is almost a Synonymous with unconscious planning involving, lesser use of local resources potentials and local people in the process of overall and industrial development.

congianse of this aspect and emphasised that vigorous and coordinated action is needed at various levels to boost up industrialisation through maximum possible use of local resources to off-set high cost and low return of investment. A higher allocation of central assistance and incentives for promotion of industries in backward areas were envisaged as instrument for securing balanced regional development.

To develop relatively backward area industrially, two working groups were set up around 1969 by the Planning Commission, one to lay down the criteria for identifying backward districts (Pandey Committee) and the other to suggest scheme of incentives for promoting industries in backward districts (Wanchoo Committee). Under the recommendations made by Pandey Committee, 227 districts were declared by the Planning Commission as industrially backward and various fiscal and financial incentives recommended by Wanchoo Committee were made available to these industrially backward areas. Subsequently when, Planning Commission decided to accept districts as units of planning, so as to have maximum possible use of local resources for district development, District Industries

Centres were formed to coordinate and promote development of industrial sector at the district level. At the same time industrial growth centres were set-up at suitable places in each district. The work under DIC's include, providing information about the district, raw materials and other resources, arrangements for machinery and equipment, raw material and credit facilities and marketing etc. Hence, we find that conscious planning for industrialisation at regional and local levels has been attempted for same time now. It is therefore important to examine the factors that lead to rapid industrialisation of an area and to what extent the planning and promotional efforts contribute to this process.

1.9. Present Study : Scope and Objectives

This study is an attempt at examining the process of industrial development in an area which has experienced a relatively rapid pace of industrialisation in the recent years, both on account of the locational and promotional factors.

Of the industrially better developed areas of the State of Uttar Pradesh, Kanpur had been not only the major, but virtually the single point till around the mid sixties.

It was not only the most developed industrially, but also the gap between Kanpur and the next group of districts with a sizeable industrial activity was large. Ghaziabad, provides the example of a district which has had a very rapid pace of industrialisation within a period of about two decades, and today, matches the level of development of Kanpur. In fact, to a certain extent, Kanpur has had the limitation that some of its industrial units, particularly in the textiles have been functioning with outmoded technology, whereas the units of Ghaziabad, being new, are generally equipped with the latest machines which incorporate a higher level of technology. Ghaziabad also has the added advantage of being situated in the proximity of national capital - Delhi. The developed market, and various central government offices and institutions located in Delhi have been easily accessible to entrepreneurs of Ghaziabad and have played a crucial role in making it an important industrial centre. All these factors make Ghaziabad an interesting case for study of recent rapid industrial development of an area. It was, therefore, thought useful to examine the pace, pattern and factors of industrial development in the district with a view to identifying the relative importance

of various factors and usefulness of this experience for industrial development of other backward areas.

The study focusses particularly on the following issues :

1. What were the circumstances and factors that stimulated accelerated industrial development in the district, particularly during the period starting with 1970?
2. What are the specific locational advantages that Ghaziabad offers for agglomeration of industries, which are generally lacking in industrially less developed districts?
3. What is the structure of industries in terms of product pattern, located in Ghaziabad? Are they interlinked industries, resource based or demand based?
4. What is the impact of industrial development of Ghaziabad on the rest of the economy of the district and neighbouring areas? Has industrialisation been able to generate forward and backward linkages?
5. How far the experiences of Ghaziabad are applicable in other parts of the State, particularly in industrially less developed districts?

1.10. Nature and Sources of Data

The study is based both on the secondary and primary data, former collected from the official sources and later, through first hand sample survey of industrial units located in Ghaziabad district.

To study the various objectives already mentioned, figures of number of factories with their employment size were complied from the office of the Inspector of Factories, Kanpur and District Industry Officer Ghaziabad for the period of study, i.e., 1970 to 1979.

Socio-economic characteristics of district under study was collected from Census Handbooks and various State Government publications. Investment, loans and expenditure made by various financial and developmental institutions, particularly of Uttar Pradesh Financial Corporation and Uttar Pradesh State Industrial Development Corporation, in the Industrial Development of Ghaziabad District, was collected from these institutions.

The field survey was conducted to collect data for intensive study into the factors which contributed to the faster development of Ghaziabad district industrially.

Information on objective facts relating to cost of production, availability of raw-material, both from local as well from outside, marketing, employment, use of incentives provided by the State and Central government etc. as well as entrepreneurs' own assessment and preferences regarding setting up of industrial units in the district was collected with the help of structured questionnaires and personal discussions with the local industrialists of the district.

1.11. Locale of the Study

Ghaziabad situated in the western part of Uttar Pradesh, adjoining Delhi, is one of the industrially better developed districts in the state and has emerged as one of the important industrial centres of the country. Ghaziabad district was created in 1976 by reorganising eight blocks (Murad Nagar, Loni, Razapur, Hapur, Bhojpur, Dhaulana, Garhmukteshwar and Simbhaoli) of Meerut and two blocks (Dadri and Bisrakh) of Bulandshahr district into a separate district. Thus the new Ghaziabad district has ten blocks covered under four revenue tehsils Dadri, Ghaziabad, Hapur and Garhmukteshwar for revenue and development administration. The total area of the district is 2590 sq. kms.

The district is bounded by union territory of Delhi, the capital of India, in the west, Meerut district in the North, Moradabad district in the East and Bulandshahr district in the South. Ghaziabad is located in the Centre of important towns, namely, Delhi, Meerut, Hapur, Bulandshahr, Agra and Aligarh. It is about, 18 kms from Delhi, 50 kms from Meerut, 192 kms from Agra, 1460 kms from Bombay and 1400 kms from Calcutta. Ghaziabad town is well connected by rail and road; the famous National Highway, the Grand Trunk Road, passes through the town and connects it to almost all the principal cities of the northern part of the country.

With three important rivers, viz., The Ganga, The Yamuna and The Hindon river flowing through it and being situated in the Ganga-Yamuna doab, Ghaziabad district has one of the very fertile soils, in the western Uttar Pradesh. Ordinarily fertile dumat clay is found in the district along the banks of the rivers, different kinds of clay belts are also available from north to south stretches. Khader belts of the breadth of 8 to 12.8 kms on the banks of the Ganga and 1.6 to 6.4 kms on the banks of the Yamuna are available, where sandy, smooth pieces of land are found.

The climate, like in other parts of the northern India is uneven throughout the year. The winters are very cold and summers are very hot while the rainfall is moderate in the district. The normal average rainfall of the district is 1320 mm. The maximum temperature as recorded by Meerut centre in the year 1978-79, was 43.7°C , whereas the minimum temperature in the same year was 4.4°C . The monsoon arrives in the district by the end of June and stretches upto October.

✓ 1.12. Ghaziabad Town

The town was founded in 1740 under the name - Ghaziuddin Nagar, by one Sahabuddin alias Ghaziuddin, a powerful Wazir of the period of disintegrating Moghal Empire. When in 1860, a railway station was established there, the British, renamed it as Ghaziabad.

The year 1859, witnessed the increase in importance of this town. It was made the tehsil headquarters and a police station was also established a year later. New markets and residential areas started developing in the first decade of the present century. The area under the walled city became over-crowded and in the year 1905 Nai-Abadi, containing two markets, known as Wright Ganj and

Wyer Ganj named after the two collectors, who founded them, were constructed. Among these two markets, Wright Ganj at present commonly known as Naya Ganj, is a wholesale market for food grains. The other market, Wyer Ganj call 'Mandi' is also a market for food grains.

Around the year 1920, the area situated on both sides of the railway road known as 'Chhoti Bazaria' and 'Bari Bazaria' began to populated. In 1936, the land, where 'Nai Basti' is situated at present, was auctioned by the municipal board and was developed into as a residential area. Then in the same year the scheme for the development of the residential area near 'Munsifi', Model Town No.1 and No.2 was prepared. A Model Town housing society was set-up, land was acquired and these two colonies were developed. But the actual development of the present city started after the second World War and specially, after the partition of the country in 1947. Subsequently various localities, such as Mukund Nagar, Ram Nagar, Arya Nagar, Dayanand Nagar, Chandrapur and Jassipura developed. More recently developed colonies in the city are, Gandhi nagar, Nehru Nagar, Kavi Nagar and Raj Nagar. Kavi Nagar and Raj Nagar are situated both sides of road which connects Hapur to the district headquarters, i.e., Ghaziabad.

In 1847, the population of the town was 5112. In 1872 it rose to over seven thousands (7365). During the period between 1872 and 1901 the population further rose to 11275. This was mainly because by the beginning of this century the traders and agriculturists were attracted by the prospects of the city and thought about it as an important 'Mandi' of food grains. In the first decade of the twentieth century (1901-11), the rise in the population was quite negligible (it rose from 11275 in 1901 to 11304 in 1911). In the next decade (1911-21) also, the variation in population was nominal (1,039). During the years between 1921-31 the population of Ghaziabad rose by 50 per cent from 12343 to 18831. But in the next decade (1931-41) the rise in population was again rather low, 26 per cent. During 1941 and 1951, the population almost doubled from 23834 to 43745, it primarily was due to the influx of refugees. Most of the refugees were businessmen, traders and industrialists. By now, many industries had already gained a sound footing and had attracted a large number of entrepreneurs and wage-earners. The influx of refugees continued during the years between 1951 and 1961. The population of the town rose from 43745 in 1951 to 70438 in 1961. By 1981, it has acquired a total population of 291955 as against 128036 of 1971.

The district has a total area of 2590 sq kms. The Census of 1981 placed the total population at 1866778 as against 1354523 of 1971. Thereby registering a decennial growth of 39.22 per cent, which is the second highest growth among all the districts of the State. As a result of this high rate growth the density of population went up from 501 in 1971 to 722 in 1981. Ghaziabad had a sex ratio of 830 in 1981. Literacy rate in the district is 36.72 per cent and is higher than that of the State as a whole (27.40). The males have a higher literacy rate (49.28 per cent) as compared to the females (21.70 per cent).

The district has attained a higher degree of urbanisation compared to the State as a whole and ranks sixth among the districts. While the urban population was around 24 per cent in 1971 it had gone up to 36.86 per cent by 1981. Among four tehsils of the district, Ghaziabad teshil has highest urban population of 54.09 per cent. The tehsils of Dadri and Garhmukteshwar on the other hand have an very low urban population.

To conclude, Ghaziabad is among the few districts of the State which have a reasonably well developed industrial base. Over the last two decades in particular, the pace of industrial activity has been quite rapid. Availability

of skilled and unskilled workers, the presence of developed infrastructure facilities, forward and backward linkages provided by some of the key units, various promotional measures taken by the government and the proximity to Delhi, are the basic characteristics of the district which have helped growth of industries in the past and are likely to lead to further acceleration in the pace of its industrialisation.

Chapter II

ECONOMIC BASE AND AGRICULTURAL ECONOMY OF
GHAZIABAD DISTRICT

Though Ghaziabad town has a commercial history and considerable industrial development has taken place in this town and other areas, the district continues to have a strong agricultural base as well and thus emerges as a district with a developed primary as well as secondary sector.

2.1. Occupational Composition of Workforce

Dependence on agriculture for employment is of much lower extent in Ghaziabad district, with about 45.72 per cent of workers engaged in agricultural activities, than in the State or the country. Around 33 per cent of workers are cultivators and 12.78 per cent agricultural labourers. The proportion of agricultural labourers has remained almost constant during 1971-81, but that of the cultivators have decreased over the last decade. Percentage of workers engaged in the household industry has also experienced a decline from 6.46 per cent in 1971 to 4.40 per cent in 1981. 'Other workers', which, broadly speaking would include workers in non-household industry and services, have, on the other hand, registered an increase in their proportion from 42.71 per cent in 1971 to 50 per cent in 1981. It may also be noted that around 56 per cent of the

Table 2.1 : Percentage Distribution of Workers
by Occupational Classification in
Ghaziabad

Sl. No.	Type of Workers	1971	1981
1.	Cultivators	38.22	32.94
2.	Agricultural Labour	12.61	12.78
3.	Workers in household industry	6.46	4.40
4.	Other workers	42.71	49.88

Source : Provisional figures 1981 Census.

**Tehsil-wise Information of Industrial Workforce
in Ghaziabad District (1971)**

Sl. No.	Name of Tehsil	No. of total industrial work-force	% to the total industrial work- force
1.	Garmukteshwar	2023	6.21
2.	Hapur	10043	30.85
3.	Ghaziabad	18120	55.66
4.	Dadri	2370	7.28
4.	Total (Ghaziabad District)	32556	100.00

Source : District Credit Plan 1980-82 Ghaziabad
District : Syndicate Bank,

industrial employment of the district is concentrated in Ghaziabad tehsil alone, another 31 per cent is contributed by Hapur tehsil, while the other two tehsils have a small portion each of the total industrial employment of the district. Ghaziabad tehsil, and particularly Ghaziabad town has thus been the major industrial area of the district.

2.2. Sectoral Composition of District NDP

Relative importance of the agriculture and industry can be gauged on the basis of the composition of net domestic product by its origin. We have used for this purpose the available data of net output from commodity producing sectors. A comparison of such data for agriculture and industrial sector, for Ghaziabad district, western region of Uttar Pradesh and the state, for the years 1976-77, 1977-78 and 1978-79 (Table 2.2) reveals that; (i) while for Uttar Pradesh and western region the contribution of agriculture has ranged between 80 to 84 per cent, and that of industry 16 to 20 per cent, the corresponding percentages for Ghaziabad district have been 42 to 50, and 50 to 58 per cent. The figures suggest a significantly high degree of industrialisation in the district as compared

Table 2.2 : Sector-wise Net Output from Commodity Producing Sectors

(Rs. In crores) (At constant prices of 1970-71)

Sectors	Ghaziabad			Western Region			Uttar Pradesh		
	1976-77	1977-78	1978-79	1976-77	1977-78	1978-79	1976-77	1977-78	1978-79
Agriculture	45.15 (50.45)	48.23 (49.76)	44.44 (41.86)	1111.96 (82.85)	1202.52 (82.01)	1199.29 (80.42)	2655.87 (83.58)	2891.23 (82.98)	2919.18 (81.55)
Industry	44.34 (49.55)	48.68 (50.22)	61.67 (58.09)	222.00 (16.54)	255.01 (17.39)	283.92 (19.04)	455.07 (14.32)	523.36 (15.02)	587.96 (16.42)
Others	-	0.02 (0.02)	0.05 (0.05)	8.15 (0.62)	8.75 (0.60)	8.09 (0.54)	66.77 (2.10)	69.61 (2.00)	72.95 (2.03)
Total	89.49 (100.00)	96.93 (100.00)	106.16 (100.00)	1342.11 (100.00)	1466.28 (100.00)	1491.30 (100.00)	3177.71 (100.00)	3484.20 (100.00)	3579.73 (100.00)

Source : District Domestic Output Uttar Pradesh (Commodity Producing Sector), Economic and Statistics Division, State Planning Institute, U.P.

to its neighbouring districts and state; (ii) The importance of industry has increased at a much faster pace in Ghaziabad district, than in the western region or the state, in a short period of three years, contribution of industrial sector in the district's output rose from 50 per cent in 1976-77 to 58 per cent in 1978-79, in western Uttar Pradesh, from 17 to 19 per cent and in Uttar Pradesh from 15 to 16 per cent during the same period.

With this brief analysis of the structure of the economy of the district, we now turn to the examination of development of agriculture in the district with a view to assessing the base and linkages it provides for industrial development.

2.3. Agriculture in Ghaziabad District

Ghaziabad, is situated in the heart of the doab area which is one of the most fertile tracts of land in the country. With rich soil and regular river system, the area has several natural advantages, which makes it specially suited for agriculture. Ghaziabad was a good granary up to the year 1940. The Rally brothers of Holland had their agency in Ghaziabad and wheat was exported to foreign countries. A large part of the wheat produce was

also sent to different grain markets in the country itself. After 1940, however, the importance of this granary began to decline. The farmers of the area began to cultivate sugarcane and the importance of 'Mandi' as a 'Gur Mandi' increased. Around 1950, new mandies were set-up in Shahdara (now it is a part of Delhi), Murad Nagar, Modi Nagar, Hapur and Dadri (now in Ghaziabad district) of Bulandshahr district.

Irrigation facilities are well developed in the district. It has a long history of irrigation starting with the middle of the 19th century. In 1854, the Uppar Ganges Canal began functioning. The canal passes through Ghaziabad and irrigates major part of cultivated land of Ghaziabad tehsil. The Yamuna canal is another important canal which also serves substantial areas of the district. Over the years, large, medium, and minor irrigation canal works have been added which together have a total length of 648 kms. The existence of abundant irrigation facilities was the main factor responsible for a successful cultivation of various crops in the district. Besides the canal system, tubewells have also been important sources of irrigation. Tubewells and pumpsets have gained importance during the recent decades. All sources together have ensured that cultivation is carried-out under assured irrigation.

The relatively well developed state of agriculture in Ghaziabad is amply indicated by certain factors of land use pattern, extent of irrigation and cropping intensity. Around three-fourths of the geographical area of the district is under cultivation. Of the net cultivated area, 90 per cent is irrigated. Around half the cultivated area under double cropping, the average cropping intensity estimating to 157. Values of all these indicators are much higher than those for the state or for the country as a whole.

2.3.1. Cropping Pattern

Wheat is the principal crop of the district having around 36 per cent of the gross cropped area under it. Maize and sugarcane are also important, each having at least 10 per cent of the area under them. Bajra is the fourth important crop from the point of view of area under it (5.44 per cent). Out of the two, food crops and commercial crops, the later has around 35 per cent of the gross cropped area in the district, which is almost twice the state average (18 per cent). Sugarcane is the most prominent commercial crop grown in the district, covering around 15 per cent of the gross cropped area, compared to the state average of 5.84 per cent under it, which is

Table 2.3 : Area under Principal Crops in District Ghaziabad and Uttar Pradesh

Major crops in Ghaziabad district	(Area in hectares)			
	Ghaziabad		Uttar Pradesh	
	1977-78	1980-81	1977-78	1980-81
(i) Food Crops				
Rice	9284 (3.15)	9914 (3.20)	4864587 (19.80)	5288455 (22.65)
Bajra	17577 (5.97)	16831 (5.44)	981549 (3.99)	994833 (4.26)
Maize	38583 (13.10)	41383 (13.37)	1193175 (4.86)	1223547 (5.24)
Wheat	102566 (34.82)	112152 (36.23)	6759737 (27.51)	8111932 (34.74)
Barley	4487 (1.52)	3558 (1.15)	963284 (3.92)	779410 (3.34)
Gram	5808 (1.97)	3873 (1.25)	1656205 (6.74)	1495881 (6.41)
Peas	10298 (3.50)	5927 (1.91)	400960 (1.63)	223793 (0.96)
(ii) Commercial Crops				
Sugarcane	49580 (16.83)	46567 (15.04)	1636481 (6.66)	1363440 (5.84)
Potato	3735 (1.27)	4975 (1.61)	201829 (0.82)	265848 (1.14)
Cotton	1472 (0.50)	1740 (0.56)	26530 (0.11)	41013 (0.18)
(iii) Others				
	51205 (17.37)	62601 (20.24)	5889560 (23.96)	3561192 (15.24)
Gross cropped area	294595	309521	24573897	23349344
% of Gross cropped area under food grains	65.09	64.36	83.29	81.65
% of gross cropped area under cash crops	34.91	35.64	16.71	18.35

Source : Agricultural Statistics of U.P., Agriculture Directorate U.P. 1977-78 and 1980-81.

consequently the second largest crop only after wheat, sown in the district. The other cash crops are oil seeds, potato and cotton. Both potato and cotton have showed larger proportion of area (2.17 per cent) covered as compared to state (1.32 per cent). Thus even though food crops account for major part of the cultivated area, yet area under these crops has a much smaller proportion in the district than in the state; corresponding figures for the district and the state being 64.36 per cent and 81.65 per cent. This feature highlights the fact that the cultivators of Ghaziabad district have taken up the production of commercial crops on a relatively large scale, which makes agriculture potentially more oriented towards industrialisation.

2.3.2. Productivity

For most crops grown in the district, per hectare output levels are higher than obtained in the state, or even in the Meerut division, of which Ghaziabad is a part, ^{is} What is particularly significant to note/that yield levels of the three most important crops of the district, wheat, maize and sugarcane, accounting for around two-thirds of the gross cropped area, are significantly higher in the district than the state or divisional averages.

Table 2.4 : Crop-wise Productivity in Ghaziabad District

Various Crops	Production 1980-81 (M. tonnes)		Yield in Quintals per hectare		
	Ghaziabad	Uttar Pradesh	Ghaziabad	Meerut Division	Uttar Pradesh
Rice	11708	5566704	11.81	15.51	10.53
Bajra	12270	733097	7.29	7.04	7.37
Maize	76600	893911	18.51	14.12	7.34
Wheat	269112	13384977	24.00	22.19	16.50
Barley	5217	1032574	14.66	14.99	13.25
Gram	2784	1288229	7.19	7.38	8.61
Peas	5848	212314	9.87	10.69	9.49
Sugarcane	2521246	64204879	541.42	533.63	470.90
Potato	88396	4164769	177.68	164.18	156.66
Cotton	215	5210	1.24	1.46	1.27

Source : Agricultural Statistics of U.P. 1980-81. Agricultural Directorate, Uttar Pradesh.

2.3.3. Agricultural Inputs

The high yield levels obviously are the result of increased use of irrigation and modern inputs in agriculture production in the district. Agriculture in the district has been making increasingly greater use of improved inputs as part of the new technology adopted by

farmers. Use of improved seeds, irrigation, fertilizer and agricultural implements has significantly increased in recent years. Let us, briefly look at the use of these inputs in the agricultural production in the district.

2.3.4. Irrigation in the District

As pointed out earlier, the existence of abundant irrigation has been the main factor responsible for a successful cultivation of various crops in the district. Canals, masonry wells, government tubewells and private wells together provide assured irrigation to more than 80 per cent of the cultivated area.

Private tubewells and canals are the two most important sources of irrigation, accounting for 40.50 per cent and 35.50 per cent of the irrigated area respectively.

Ghaziabad district had a very high percentage of net irrigated area in both the years, i.e. 1977-78 and in 1980-81,¹ as compared to either Meerut division or the

¹The data are available only from the year 1977 and onwards.

Table 2.5 : source-wise Irrigation Pattern

Tehsils/Blocks	Net irrigated area (hectares)	Mode of Irrigation (Area in hectares)					% of irrigated area to net area sown
		Canals	State tube-wells	Private tube-wells	Tanks wells & ponds	Others	
<u>Gardhmukteshwar</u>							
Gardh Sambhalia	16101 17520	4797 4301	810 2502	5320 5735	260 -	116	NA NA 89.00
<u>Hapur</u>							
Hapur Dhaulana Bhojpura	26089 16411 14859	1823 7767 7370	2550 1901 1278	20990 3695 4719	458 3041 1406	263 1 86	NA NA NA 98.50 72.00 97.00
<u>Ghazibabad</u>							
Razapur Muradnagar Loni	11701 14169 11244	5590 8816 3775	1467 108 2936	4098 4015 5847	546 1171 1889	- 59 601	NA NA NA 90.00 80.00 66.00
<u>Dadri</u>							
Bisrakh Dadri	16547 16262	4393 8437	197 540	6546 4170	5007 3115	404 -	NA NA 96.00
Total	160903	57069 (35.47)	14289 (8.88)	65135 (40.48)	16893 (10.50)	1530 (0.95)	5987 (3.72) 86.50

Source : District Credit Plan 1980-82, Ghaziabad District, Chapter I, Table V.

state. Whereas, in the year 1977-78, the state figure for the net irrigated area as a percentage of net area sown was only 48.75 per cent, the district was showing more than 85 per cent area irrigated. The Meerut division figure was also quite high as compared to the state. In the year 1980-81, the percentage showed an increase in the district, division and also in the state. The divisional figures rose upto 85.88 per cent from 75.28 per cent in 1977-78. There was a simultaneous increase in irrigation facilities within the district and by 1980-81, 89.66 per cent of the net area sown was irrigated. The level of irrigation in the state also increased, although on a lower scale, to 54.89 percent. Consequently, irrigation intensity in the district was higher as compared to Meerut division and the state in both the years. In the year 1980-81, the irrigation intensity for the district was 153.

2.3.5. Area under High Yielding Variety

High yielding variety seeds is one of the main improved inputs in modern agriculture and contribute major share in agricultural production. Ghaziabad, which is one of the major producer district of wheat has around 95 per cent of its total wheat area under the HYV. The

other important crops, using HYV seeds are maize and bajra. The percentage area under HYV to gross cropped area, in the year 1978-79 was 34.74 per cent for the district, which is similar to that of state.

2.3.6. Fertilizer Consumption

Higher fertilizer use has been one of the important factors in raising the level of agriculture productivity and production in the district. In 1980-81, consumption

Table 2.6 : Fertilizer Consumption

	(Kg/hectare)			Total
	Nitro- genous (N)	Phos- phatic (P)	Pota- ssium (K)	
Ghaziabad	53.66	13.26	4.44	71.36
Meerut Division	62.55	12.84	4.06	79.45
Uttar Pradesh	35.42	8.61	3.32	47.35
India	36.90	9.00	3.50	49.40

Source : Agricultural Statistics of Uttar Pradesh, 1980-81,
Agricultural Directorate, Uttar Pradesh.

of Nitrogenous fertiliser in the district was 53.66 kgs per hectare, as compared to the state and national level figures of 35.42 and 36.90 kgs per hectare. However, the

other districts of Meerut division have higher fertiliser consumption per hectare than the Ghaziabad district. The fertiliser consumption for entire Meerut division was 62.55 kgs per hectare. In Ghaziabad district, consumption of Phosphatic fertiliser was 13.26 kgs per hectare, while in the state and India as a whole, the figure was around 9 kgs per hectare, whereas Potassic fertiliser consumption is low but still it was consumed more in Ghaziabad than the state and India average.

2.3.7. Agricultural Implements and Tools

Although mechanisation has taken place in the district but it is limited only to large land holders and still the wooden ploughs occupy prominent place among the various agricultural implements, particularly, in Garhmukteshwar and Ghaziabad tehsils which together account for roughly 61 per cent of the total wooden ploughs of the district. The relatively, lesser use of wooden ploughs in two tehsils of Hapur and Dadri² may be due to the fact that modern implements have replaced the outdated wooden ploughs. For

²These two tehsils, Hapur and Dadri are the major wheat growing area in the district.

Table 2.7 : Block-wise Distribution of Agricultural Implements in Ghaziabad

Name of Block	Wooden plough	Tractors	Thresh-ers	Meston & cul-tiva-tor	Harrow & cul-tiva-tor	Sprayer	Seed drill	Nandhi	Dibbler	Others	(Numbers)
											5523
Garamukteshwar	14323	157	214	213	157	7	80	-	-	-	5523
Simbhaoli	18547	481	677	132	556	8	27	1151	51	9553	9553
Hapur	46558	505	322	5	783	11	11	207	5	993	993
Dhaujana	2170	50	69	-	63	6	4	-	-	-	2315
Bhojpur	14737	107	364	415	265	7	18	43	10	1520	1520
Razapur	4636	378	855	597	463	7	27	785	7	6764	6764
Muradnagar	7782	438	329	161	495	5	22	2033	-	5892	5892
Loni	18288	218	205	-	113	6	154	412	-	8228	8228
Bisrakh	14595	367	-	3550	1455	10	50	-	-	3985	3985
Dadri	3710	96	120	234	92	3	6	-	-	736	736
District Total	103446	2797	3155	5307	4442	75	399	4631	73	46509	46509

Source : Statistical Bulletin Ghaziabad, 1983.

inter-culture operations, tractors are heavily deployed in the district. Upto the year 1978, the district had in all 2797 tractors, of which Hapur and Dadri tehsils together accounted for 40 per cent. The availability of tractors per hundred hectares of net sown area worked-out to 1.46 of the district. The use of threshers was also found quite extensive in the district; there were 3155 threshers in use in the district in 1978. Among the tehsils, Ghaziabad was using the most (44 per cent) threshers, whereas Dadri, the lowest, just only 4 per cent. On the whole, therefore, modern agricultural implements are being used increasingly in the district.

2.4. Conclusion

The district on the whole, therefore, emerges as a well developed district on the agricultural front. The highly fertile soil served by an extensive irrigation network makes the area suited for the cultivation of both food grains and commercial crops. Ghaziabad thus is among the important wheat and sugarcane growing areas of the state which itself speaks for the level of agricultural advancement. Moreover, a high percentage of the gross cropped area is under commercial crops. As a consequence of the high irrigation there has been wider use of high yielding variety of seeds and of fertilisers and pesticides. At the same time technological advancement has been

achieved in agricultural practices in general which is evident from the use of modern agricultural implements. Looking at the contribution of agriculture to the district economy, it contributes 42 per cent of the Net Domestic Output (Commodity Producing Sectors only) and employees 46 per cent of the total workforce of the district.

Development of agriculture, in the manner it has taken place in Ghaziabad district has a significant role in its industrial development. Supply of food requirements of the industrial workers and raw-material for processing in some industries are obtained from agriculture. In fact, industrial development has initially taken place with the development of local raw material based industries providing the beginning around which other industries have subsequently grown. A number of sugar producing units both large and small, and those in food processing lines in Ghaziabad, are the direct examples of this kind of linkage. On the other hand, agriculture has also induced development of industries like fertilisers, pesticides and particularly agricultural implements in the area as the growing agriculture has proved to be a source of constant demand for products of these industries. In this manner agriculture seems to

have played a vital role in industrial development of the district by providing both forward and backward linkages to the industrial sector.

Chapter III

HISTORICAL SKETCH OF THE INDUSTRIAL DEVELOPMENT

3.1. Industrial Origin of Ghaziabad

Ghaziabad district like most other areas in the country had been predominantly agricultural in nature till some decades back and the manufactures occupied hardly a significant place in its occupational pattern. Nevertheless certain industries did exist in the nineteenth and in the early years of the twentieth century which call for special mention as they gave employment to quite a large number of persons within the district. Processing of leather was probably the main 'manufacturing' industry which was carried out in the district by a large number of Harijans. Hides, horns and hooves were sent to Calcutta and Kanpur markets for use as material in leather products industry. Some manufacture of final products also took place locally. Shoes manufactured manually at 'Pilkhuwa' were mostly exported to the neighbouring districts and also to Delhi. Manufacture of shoes was considerable at Ghaziabad, Hapur and at 'Mugimpur'.

Ghaziabad and Hapur tehsils were also important cotton producing areas and a big centre of cotton trade and cloth weaving. More than half the output used to be exported to Calcutta and Bombay till about the end

of the nineteenth century. By the beginning of the twentieth century the silk industry had also emerged of some importance. Though the experiments made to rear silkworms at Dasna and Ghaziabad were not successful, because of the inclemency of the prevailing north winds. But activity of embroidering silk and velvet caps developed well in the area. Pottery was another industry which has a long history in the area. It had developed as far back as the eighteenth century, apparently introduced into the district from Multan. The village 'Bahadurgarh' in Hapur tehsil had become well known for the pottery products.

The cultivation of indigo and the manufacture of dye in this district goes back to pre-British times; the latter was mostly in the hands of Muslim land holders. The industry began to languish after the advent of British rule. They did establish few factories and agency houses for trading in this commodity. But the failure of the agency houses led to the abandonment of the few factories in Puth and Sayana, and cultivation of indigo had consequently become negligible by 1840. The industry was revived again through the efforts of the 'Skinner Family', who established a indigo factory

in Ghaziabad tehsil. By 1863 some factories had been started in Ghaziabad tehsil (at Dasna), Baghpat (presently in Meerut district) and Hapur, and the quantity exported of dry indigo from the district in that year was about 1340 quintals. In the eighteen seventies, Michel's factory at Massuri near Dasna owned and supervised by Europeans was said to be the largest in the whole of India and could produce 1340 quintals of dry indigo annually. But by the beginning of the present century the industry had almost disappeared.

Before the first World War, there were only few industrial units of some significance in Ghaziabad. The Ayodhya Prasad Chemical Works established in 1912, was the first factory of Meerut district. The other unit was an iron and steel re-rolling mill known as Iron and Steel Manufacturing Company. Later on, this company was purchased by Seth Mukund Lal of Lahore. The name of the unit was changed and new name, Delhi Iron and Steel Company (DISCO) was given to it. One other unit which operated on a partnership basis was Federal Chemical Works.

The area constituting the present Ghaziabad district had no sugar mill till 1932, when Simbhaoli Sugar Works (Simbhaoli), the Modi Sugar Mill (Modi Nagar) and Dewan

Sugar Mill (Dewan Nagar) were set-up. Two years later another sugar mill, the Ram Lakshman Sugar Mill, was established at Mohiuddinpur. One of the reasons for these factories coming into being was the grant of tariff protection. But as a result of the fixation of production quota in sugar mills in the year 1940-41, further expansion of the industry did not take place.

3.2. Industrial Development During the War

The Second World War proved to be a blessing for industrial development of Ghaziabad as the demand for industrial goods increased. With the policy of the Government to severely restrict imports of goods from foreign markets, home industries received a boost. The existing units in Ghaziabad increased their production capacity and some new units were also set-up. Delhi Iron and Steel Company began to receive orders from the Defence stores, for the manufacture of specific requirements. The demand for explosives increased, to meet requirements of the War and Ayodhya Prasad Chemical Works, benefitting substantially.

The Second World War period also saw the establishment, in Ghaziabad, of the biggest vanaspati oil factory in India, the Amrit Vanaspati Company in March 1940, with

a capital of Rs.16 lakhs. The success of the vanaspati product in the market, encouraged some other industrialists to establish units and in 1943, Vanaspati Industries Ltd. came as a follower of Amrit Vanaspati Company. It was taken over by Hindustan Lever Ltd. after a few years. On account of these two factories, demand for vegetable oil increased. As a response, an oil factory, Chattarbhuj Jagdish Chandra Oil Mill was set up in 1943. This factory progressed well upto 1951, but after that, due to mismanagement, it incurred heavy losses and ultimately, it had to be liquidated. Besides, these factories, the War period also saw establishment of a few units manufacturing gas plants, wood products, confectionary and other food products. In the post Second World War period, assistance provided by the government during the War, began to be withdrawn in general and factories solely dependent on government orders became sick units due to lack of orders. During the War period industrial disputes were prohibited under the Defence of India Rule. As soon as the War was over, general discontent grew among the workers as their wages had not increased adequately.

3.3. Post-Independence Period

The industrial development of Ghaziabad on a wide scale started with post-Independence period. To begin with, the industries which came up were basically agro based in nature, utilising locally available material. With 1947, came partition and the introduction of foot-loose industries to Ghaziabad, as a number of large scale, small scale and cottage industries were started by displaced persons who came from West Pakistan to Delhi. Due to this influx of refugees in Delhi, the price of land shoot up within a short period. Ghaziabad being the nearest town to Delhi, and price of land there being nominal (the land was available at one rupee per sq yard), these refugees came to Ghaziabad. At the time of Partition, there were only four big factories and few other small factories working at Ghaziabad. There were also few industries working in Sahibabad area, on both sides of G.T. Road, between the Hindon Bridge and Uttar Pradesh - Delhi border.

The spurt to industrial development was provided by oil engine manufacturing with the setting up of the Lyallpur Engineering Company in 1948, and few other units in similar line of production followed soon after.

This industrial activity was started by those industrialists, who had similar type of factories in Lyallpur, West Pakistan. The Lyallpur Engineering Company can be said to be the mother unit of engineering factories at Ghaziabad. It was followed by another big factory, Punjab Oil Expeller Company, started by Late Pt. Dewan Chandra Sharma, who had an Oil Expeller Manufacturing Unit at Lahore. In 1949, another famous factory, Guru Nanak Engineering Company was set up on a small scale, by some of the partners of Lyallpur Engineering Company.

The year 1948 witnessed the establishment of a number of important industrial units in other lines, in Ghaziabad. One was the Iron & Steel Safe and Cabinet Factory established by Rohan brothers. The famous Hand-loom Factory of Webbing and Belting was started by a Kashmiri family which produced textile products for both domestic and the international market. Several units manufacturing paints and varnishes, door and building fittings, chain-pulleys and other engineering products had also come up by 1950. In 1951, the ceramic industry got started with the setting up of Bhatia potteries. Its bone China products have become famous for its quality. In the year 1953, the first cable and wire factory, Hindustan Insulated Cable Company was set up and by 1955,

manufacture of tin containers was introduced in Ghaziabad with the setting up of Hindustan Tin Works. In the industrial exhibition 'India 1958' held in Delhi, as many as ten Engineering concerns of Ghaziabad were given place in the Uttar Pradesh Government's Industrial pavillion in which working models of oil engines and expellers were displayed by the manufacturers. In the year 1959 and 1960 several new 'Oil Engine' units were set up. After the year 1961, due to fall in demand of the diesel engines, the rapid growth of this industry was checked and the number of new units to be set up was restricted.

As can be seen by the short historical sketch of the industrial development of the district given above, Ghaziabad had developed an industrial base by the time India attained Independence, and some industries have had a long history. Displacement of population from West Punjab, Pakistan, the proximity to Delhi and programmes of industrial development under the Five Year Plans strengthened the foundation of the industrial base still further and after the fifties, Ghaziabad started figuring prominently in the industrial map of Uttar Pradesh. Not only were industries growing, but also the

structure of industries got continuously diversified as a result of which foot-loose industries came into prominence along with some of the resource based industries.

Among the important industries that had attained an important place in the industrial economy of Ghaziabad by the 1960 were Vanaspati units, of which there were three large units, one at Modi Nagar and the other two at Ghaziabad itself; oil expellers, bakery units, cotton textiles with two large scale units and a large number of small scale and household units concentrated in Pilkhuwa and Murad Nagar. Of the large scale units the Weaving and Belting factory of Ghaziabad had developed very rapidly during the Second World War as a consequence of very heavy orders received by it from the government stores. Of the new industries chemicals and engineering have had come up prominently in the district. Among the chemical and chemical products group industries the district had three large scale distilleries and a paint and varnish units. The engineering units of Ghaziabad were engaged in the production of engineering equipment and apparatus, agricultural implements, diesel oil engine manufacturing, chain and pulleys etc. By

this time Diesel Oil Engine Industry has assumed considerable importance. Some units in this industry, suffered due to difficulty in getting an ISI clearance on their products so as to be eligible for sale under bank finance, and had to diverted their production to other items.

Other industries of some significance in the district were paper and paper products, bone crushing and soap. Thus there had developed a wide industrial base in Ghaziabad by 1960, both in the large as well as the small scale sectors. Over the years although some more industry groups have figured in the industrial development, but, by and large, the industry groups which had been developed by 1960 have consolidated their position and are the key industries around which the process of industrialisation has taken place.

3.4. Industrial Estates and Areas

To restrict the haphazard industrial development in and also to help small scale industries/establishing, modernisation and expansion, the state government introduced the Industrial Estates/areas in Ghaziabad district. The State government published the draft master plan for the regulated area of Ghaziabad in 1960.

Adequate area has been reserved for heavy industries in the master plan on both sides of the Grand Trunk Road on the way to Bulandshahr, south of the railway station of Ghaziabad and south of Sahibabad. Sites had also been reserved for light industries on east of Meerut road, both sides of the G.T. Road and the area south of the G.T. Road.

Uttar Pradesh State Industrial Development Corporation, has developed nine industrial areas in Ghaziabad out of the total 40, in the State as a whole. These industrial areas are; Loni Road, Meerut Road, Sector 22, Kavi Nagar, Sahibabad, Bulandshahr Road, Loha Mandi, South Side of G.T. Road and Loni Estate. Apart from these industrial areas, Ghaziabad has several private industrial areas where number of small and medium scale industries are established. They are mostly located in Rajendra Nagar, Arya Nagar, Patel Marg and Hapur Road.

Establishment of New Okhla Industrial Development Authority (NOIDA) in the year 1976 was an important step in the industrial development of the district. This industrial complex has been developed on about 440 hectares of land adjacent to Delhi's Trans-Yamuna area

and aimed to assist the setting up of small-scale units with all facilities for common services. At present about 1200 small units with a total investment of nearly Rs.30 crores, have started working in the area. These units employ about 20,000 workers. The main items of production are garments, electronics, stainless steel utensils, steel fabrications, auto-parts, cycle parts, tin containers, PVC cables, plastic products, printing press, printing ink, rubber products, paints and varnish, soap, nuts and bolts etc. NOIDA being declared a backward area, the entrepreneur is entitled to all the fiscal and other benefits that go with it. The complex is exempted from power-cut and provides good infrastructural facilities to its entrepreneurs.

3.5. Industrial Townships

These industrial townships have sprung up as a consequence of planned efforts on the part of the government while some industrial townships have developed either wholly by private entrepreneurs, like Modi Nagar and Mohan Nagar; or as a consequence of a few industrialists setting up of their units in an area, such as in the townships of Hapur and Murad Nagar.

3.5.1. Modinagar

Modinagar was founded in the year 1932. The first mill established at Modinagar was the Modi Sugar Mills in the year 1932. Various factors made Modi Nagar an ideal location for the establishment of this mill : the area was predominantly sugarcane growing; facilities like railway station, police station and post office were already available, land area for further extension of industries was abundant; Delhi and the commercial mandies of Meerut and Hapur were close by - and ample semi-skilled and un-skilled labour was available. The crushing capacity of this mill at the time of establishment was only 800 m. tonnes per day. Its present cane crushing capacity is 1132 m. tonnes per day.

The next unit to be established at Modinagar was the Modi Vanaspati Manufacturing Company started in 1938-39, with 80 m.t. capacity oil Hydrogenation plant. The problem of the disposal of by-product of Vanaspati factory, gave rise the idea of establishing a soap factory. The Modi Soap Works thus came into existence in the year 1940. The product of this factory has captured a wide internal market. The need for containers for packing vanaspati led to the starting of tin factory in the year 1942. This unit, provides packing materials to all Modi group

of industries as well as a few local units of the district.

The Modi Paints and Varnish Works was the next to come up in 1946-47. The products of Modi Paints, captured the domestic market in a very short time and are also being exported. The other unit, Modi Glycerine Works, was set up in 1947. This factory was basically established to cater to the needs of other Modi units, but because of various usages of the product in other industries and its surplus availability it is supplied to units outside the Modi group as well.

The post-Independence period has been Modi Nagar develop to a well established industrial township. In the two decades following independence Modi group of Industries added 13 more factories in Modi Nagar and one Rubber Factory in Modi Puram (Meerut district).

Modi Spinning and Weaving Mill Company, was established in 1947 with a complete plant for spinning with 22,000 spindles along with dyeing, bleaching and printing plants. In the year 1949, the textile mills started production. In 1952 a Hosiery Factory was added to the textile industry. The progress made in this field led to the establishment

of Modi Silk and Rayon Mills in 1956. This plant is most modern, manufacturing art silk fabrics. In the year 1957, a new unit was added to the Modi Spinning and Weaving Mills Company Limited, to manufacture cotton yarn. A distillery plant was set up in 1959 with a capacity of one million gallons of Ethyl Alcohol. In the year 1960, a torch factory was set up followed by a carbon-di-oxide factory in 1962 to manufacture 12 lakhs cubic centimeters of gas per annum.

An engineering unit, Modi Arc Electrodes Company came into being in 1963. The arc electrodes have tremendous demand in different types of private and public units. The company started production in technical collaboration with Dia-Invest Export of East Germany.

Modi Steels, which started production in the year 1965 manufactures; wires of electrodes quality and other types; spring steels, angle iron, iron plates, joints; steel casting for Railways, cement and sugar mills. The most modern machinery has been imported to equip this factory. This factory is the biggest of its kind in Northern India. In the year 1968-69, another factory of Modi Group of Industries came into being - the Modi Pan Limited, established to manufacture the Nylon - 6 -

filament yarn. This unit is in collaboration with a U.S. Company.

In the year 1949, a new colony was built up with 25 sheds for small scale industries and a number of residential houses. The colony is named Govind Puri, having small scale units in textile products, silver electroplating, engineering goods, locks, iron and steel goods, packaging, saw mill, fountain-pen factory, printing press etc. These small scale industries of Govind Puri, according to a rough estimate, are providing employment to more than 2,000 workers. Modi Nagar, having a number of large scale and small scale industries to its credit, somehow failed in encouraging ancillary units. Apart from Modi's own units, working for their sister units upto some extent, very few units can be mentioned which come in the category of ancillary units.

3.5.2. Hapur

Hapur which is an industrial township today had no organised industries except a few oil expellers units three decades ago. During the second world War, a few Dal and Oil Mills were established in the town. The declaration of Hapur as an industrial area by the State

Government attracted entrepreneurs to invest in various industries. In the year 1975, about 55 registered factories were functioning, employing 1268 workers. Agro based industries figured prominently in terms of both, number of units (27 per cent) and employment (20 per cent). The industries manufacturing machinery, are also not lagging behind with 19 per cent of industrial units. However, the employment in this industry group is much higher (33 per cent) than agro based industries. Besides these, there are a large number of units in the unorganised sector of which Handloom factories are very common. The secondary sector, consisting of household industries, manufacturing units and construction, employs 23 per cent of the total workforce.

3.5.3. Muradnagar

Muradnagar owes its prominence primarily to the handloom industry which is in operation in the form of a household industry. Some of the more prosperous households have gone in for powerlooms as well. The weavers of this area are highly skilled and produces cloth of various types which have captured an all round market. The Uttar Pradesh Handloom Corporation, Kanpur is providing facilities to these weavers by way of providing

raw material, technical assistance as well as taking guarantee for marketing their products through the network of their sale outlets in the different parts of the country. The armed forces are also a regular purchaser of the "Durries", "Dutaee" manufactured in Muradnagar.

The development of the handloom industry in Muradnagar has given rise to ancillary activities as well. The number of blacksmiths has swollen up over the years to carryout repair work. Dyeing units, calendering units and depots for sale of yarn have also been set up. And at the same time transporters have been attracted, since Muradnagar is on the main Meerut Delhi Road and is therefore well linked by road and rail both.

Muradnagar has a very big ordnance factory. The handloom industry as well as the ordnance factory has opened employment opportunities for the workers of Muradnagar and its adjoining areas.

3.5.4. Mohan Nagar

On the main G.T. Road leading to Delhi is Mohan Nagar, which houses various units of the Mohan Meakin Brewries Ltd. This industrial house specialises in producing various brands of alcoholic drinks as well as soft drinks.

They have, of late, started production of various agro based consumer products. They have also set up a plant incorporating the latest technology, which manufactures bottles of different types to meet their own requirements. Mohan Nagar is providing employment facilities to over 2500 workers. There are a number of other industries as well engaged in the manufacture of textile products, engineering goods, metal products, board and tin containers and assembly of tractors around Mohan Nagar.

3.6. Conclusion

It may, therefore, be summed up that the district which had a modest beginning in the industrial field at the start of the twentieth century, has since flourished into a massive industrial agglomeration with a highly diversified industrial base consisting of household type, small scale and cottage industries as well as large factory establishments spread over numerous government and private industrial estates/areas as well as scattered over the various small areas on the basis of the specialised skills available in them. Resource based industries like sugar factories right down to foot-loose industries

like those making the most sophisticated electronic equipments can all be found in Ghaziabad covering almost the entire range of products covered in the National Industrial Classification. Concentration is, however, found of basic metal industries, casting and forging units, machinery manufacturing industries, chemical and chemical products in particular. In the un-organised sector handlooms are prominent.

Chapter IV

INDUSTRIAL BASE OF GHAZIABAD DISTRICT

Uttar Pradesh is among the industrially less developed States of India. A major part of its industrial activity is to be found in the small, unorganized and the village and cottage industries sectors. Sugar and cotton textiles have been the major traditional industries in the organised sector. In the recent decades, other relatively modern industries like engineering and chemicals have emerged as significant elements in the industrial structure of the State. Industrial development in Ghaziabad district has mainly coincided with the structural changes in State's industrial structure into these new directions. Consequently, it can be expected that the industrial structure of the district will have characteristics distinct from that of the State as a whole. In the present chapter, we have, therefore, attempted a portrayal of the industrial structure of Ghaziabad both in relation to the State's industrial structure and in terms of its own internal characteristics.

The study of industrial structure of Ghaziabad district attempted here deals with the following aspects :

1. Contribution of the district in the industrial economy of Uttar Pradesh, in terms of number of factories, employment, capital and production;

2. Comparison of the pattern of the relative contribution of different industry groups in the total industrial units, employment, capital and output between Ghaziabad and U.P.;
3. Identification of the industrial base of Ghaziabad on the basis of its pattern of specialization and importance of different industry groups;
4. Relative roles of the large and small units in the districts industrial structure; and
5. An assessment of the recent changes in the industrial composition of the district in terms of product and size structure.

We have used data from the Annual Survey of Industries (ASI) for the purposes of our analysis. Since Ghaziabad district was carved from Meerut district in the 1976, separate data are available for Ghaziabad only from that year and the latest year for which data are available as of now (1982) is 1979. On account of this limitation of data most of our analysis is confined to the period 1976-79, both years inclusive. For assessing the contribution of Ghaziabad in the State's industrial structure, and a comparison between the two, we have utilized data for the year 1977-78.

4.1. Ghaziabad in the State's Industrial Economy

Looking at the figures of the number of registered factories, fixed capital, number of production workers, total employment and value of production in Ghaziabad and the whole State as given in Table 4.1, it is quite

Table 4.1 : Contribution of Ghaziabad to Uttar Pradesh's Industrial Economy (ASI Sector)

	No. of factories	Fixed capital (in lakhs)	Product ion workers	Employ ment	Production (Rs. lakhs)
Uttar Pradesh	5958	225327.91	533437	665517	242071.47
Ghaziabad District	693 (11.63)	11350.55 (5.04)	43808 (8.21)	56909 (8.55)	40245.06 (16.63)

evident that the district has emerged as an important contributor to the State's industrial sector. Of the 5958 registered factories in the State, 693 units or 11.63 per cent are in Ghaziabad, with 5 per cent of the fixed capital, over 8 per cent of employment and 17 per cent of industrial output of the state. As one of the 56 districts of the State, Ghaziabad thus contributes a significant proportion, particularly of the industrial

output of the state. In fact, in terms of certain indicators¹ of industrial development, it ranks first followed by Meerut and Kanpur in the entire State.

A closer look at the figures of different variables in Table 4.1 also suggests some distinguishing features of Ghaziabad's industrial activity :

- i. The average factory in Ghaziabad is smaller in size than an average factory in the State, in terms of fixed capital and employment, but turns out larger production than an average factory in the State as a whole;
- ii. Both capital and labour productivity, output per unit of factor inputs, is higher in Ghaziabad than the State's average; and

¹(i) Percentage of industrial sector to total net domestic product, (ii) value added by manufacture per industrial worker, (iii) value of industrial output per KWh consumption of electricity, (iv) concentration of all factories per thousand sq. kms. of area, (v) workers engaged in industrial sector per sq.km. of area, (vi) percentage of household industrial workers to total workers, and (vii) percentage of other workers to total workers.

According to the composite index of development based on the above indicators. Kanpur was on the top in the year 1970-71, whereas in the year 1980-81, Ghaziabad stood at first, followed by Meerut and Kanpur. R.T. Tewari, 'District-wise Pattern of Development in Uttar Pradesh, GIDS, 1983, pp.77-87.

Table 4.2 : Percentage Distribution of Factories, Fixed Capital, Production Workers, Employment and Production in the Various Industry Groups of Gaziaab and Uttar Pradesh

Industry Groups	Ghaziabad			Uttar Pradesh		
	No. of registered factories	No. of production workers	Employment	Production	No. of registered factories	No. of production workers
Food Manufacturing Industry & except Beverage Industries	3.75	1.47	10.30	9.58	3.57	25.33
Beverage Industries	0.50	1.67	2.21	2.33	19.75	3.19
Manufacturing of Textiles except manufacturing of textile not elsewhere classified	4.47	12.44	20.85	19.17	15.90	3.74
Manufacturing of Footwear, other wearing apparel and made up textile goods	0.58	0.73	0.58	0.55	0.11	0.99
Manufacturing of Furniture and Fixtures	1.15	0.09	0.58	0.51	0.17	1.24
Paper products	0.43	0.02	0.06	0.06	0.05	0.37
Printing publishing and allied industries	6.93	2.54	2.34	2.28	1.29	5.64
Manufacturing of Rubber products	5.63	3.18	2.13	2.26	2.20	2.60
Manufacturing of Chemical and Chemical products	6.93	13.71	4.73	5.37	10.34	4.97
Manufacturing of Product of Petroleum & Coal	3.17	3.56	5.36	5.10	2.56	7.55
Manufacturing of non-metallic mineral products except production of petroleum and coal	15.00	15.94	14.60	14.05	14.23	9.18
Basic metal Industries	9.52	4.83	5.75	5.69	3.18	3.29
Manufacturing of metal product except machinery & transport equipment	18.75	6.98	8.56	8.94	4.80	8.02
Manufacturing of mechanical machinery except electrical machinery	6.93	12.00	6.08	7.19	8.36	3.99
Manufacturing of electrical machinery apparatus and supplies	4.62	2.91	4.26	4.32	2.16	2.30
Manufacturing of transport equipment	0.72	0.23	0.49	0.48	0.26	1.81
Gas	0.53	0.57	0.14	0.17	0.10	0.10
Cold storage	1.59	0.78	0.27	0.36	0.03	2.10
Others	8.60	16.34	10.65	11.58	10.94	8.58
	100.00	99.99	99.99	99.99	100.00	99.99
						99.99
						100.00
						100.00

Source : Annual Survey of Industries, Economics and Statistics Division,
State Planning Institute U.P., 1977-78.

iii. Capital intensity, in terms of fixed capital per worker is lower in Ghaziabad than the State's average.

4.2. Structure of Industries in Ghaziabad as Compared to Uttar Pradesh

A broad spectrum of the industrial structure in the State as well as in the district Ghaziabad for the year 1977-78 is given in Table 4.2. The table gives the share of different industry groups categorised at the two-digit level industry classification, in number of registered units, total employment, output and capital. Table also gives the percentage contribution of each of the different industrial groups in the total of the district and the State.

In terms of the number of registered factories, manufacturing of metal products (except machinery and transport equipments) is the largest industrial group with 18.76 per cent of factories, in Ghaziabad. It is closely followed by manufacture of non-metallic mineral products (except production of petroleum and coal) with 15 per cent of factories. Basic metal industries, with 9.52 per cent, printing, publishing and allied industry, manufacturing of chemicals and chemical products and manufacturing of machinery (except electrical machinery)

each with around 7 per cent, registered factories and manufacturing of rubber products with 5.63 per cent of registered factories, constitute the other important industries in the district. Textiles, electrical machinery and agro-based industries particularly food manufacturing also have a significant place in the district with each claiming between 4-5 per cent of the registered factories. Footwear, other wearing apparels, paper and paper products, transport equipments and gas are minor industries with less than one per cent of factories.

In the State's industrial structure, on the other hand, food manufacturing industries (including beverage industries) contributed the largest around 28 per cent of registered factories. Non-metallic mineral products has second place in terms of number of factories both in Ghaziabad and Uttar Pradesh. This particular industry group had 9.18 per cent of the registered factories in the State. Basic metals and metal product groups with 8.29 per cent and 8.02 per cent of factories were as important in the State, as in Ghaziabad. The manufacturing of petroleum and coal products constitute 7.55 per cent of total factories in State. The factories manufacturing machinery except electrical machinery contribute around

4.0 per cent in total registered units of Uttar Pradesh; in Ghaziabad district their percentage was higher at 7. Manufacturing of metal products, rubber products, chemicals and chemical products have a larger proportion of factories in the district than in the State. In Uttar Pradesh, the percentage for these industry groups were 9.18, 8.02, 2.60, 4.97 while in Ghaziabad their percentages were 15.0, 18.75, 5.63 and 6.93 per cent, respectively.

4.2.1. Employment Structure

The relative importance of different industry groups in terms of employment was, however, not found very much distinct in Ghaziabad from the State as a whole. The first three dominant industries from the standpoint of employment, in the district were manufacturing of textile products (19.17 per cent), manufacturing of non-metallic mineral products (14.05 per cent) and food products (9.58 per cent). These three industries together accounted for 42.8 per cent of the total number of employed in the manufacturing sector. These three industries together held even a greater dominance at the State level with a contribution of almost half the total employment. But pattern of Contribution of each/these three industrial groups in the State's industrial structure was different.

Agro-products, at State level had a share as high as 33.24 per cent in employment as compared to 9.58 per cent in the district. Shares of textile products (9.76 per cent) and non-metallic mineral products (4.63 per cent) are far below in the State than at the district level. The three industry groups together, however, accounted for 47.68 per cent of the total number employed in the manufacturing sector at State level, as compared to 43 per cent in Ghaziabad.

Metal products and manufacturing of machinery, employ 8.94 per cent and 7.19 per cent, respectively at district level, but only 2.35 per cent and 4.72 per cent at the State level. Textile products, rubber products, non-metallic mineral products, and basic metal industries, have somewhat higher percentages of production workers in the district than at the State level. Food products is one group which has a much larger share in employment at the State level than that at the district level.

4.2.2. Fixed Capital Size Structure

The value of fixed capital in terms of land, building, machinery etc. is another indicator of the size of the industry. Differences in the inter-industry capital structure between district and the State, were more or less in line with such differences in employment structure.

Textile products, rubber and rubber products, chemicals and chemical products, non-metallic mineral products, manufacturing of metal products and manufacturing of machinery except electrical machinery were contributing higher proportion of fixed capital in the industrial structure of Ghaziabad than that of the State. These six industry groups accounted for 43.00 per cent of the total fixed capital in the district's industries while their share in the State's industrial fixed capital was 21.41 per cent only. Most other industry groups had almost similar proportions in the investment of the fixed capital in the district and the State. The factories covered under "others" shows a difference as the group at the State level contribute 69.67 per cent, while the percentage share at the district is 16.34 per cent. This disproportionately higher share of the industries of "others group" at State level is mainly due to the inclusion of in various industries/"others group" which either did not exist at the district level, or were not classified in their respective groups in the ASI data because they had less than three factories each.

4.2.3. Production Structure

The contribution of agro-based industries (food product and beverage) to the industrial output of the district is

quite high (23.32 per cent) though not as high as in the State (30.68 per cent). But in Ghaziabad the major contribution (19.75 per cent) is made by beverages, in Uttar Pradesh, on the other hand, food products dominate in the group with 23 per cent of output. Textile industries contribute the second largest share of industrial output in the district with 15.90 per cent, in the State it contributes only 8.63 per cent. The industries manufacturing non-metallic mineral products is another important group in the district contributing 14.23 per cent of industrial output, their share at state level is only 8.65 per cent.

Manufacturing of chemicals and chemical products, has a 10.34 per cent share in the value of production in the district comparable with 11 per cent at the State level. Basic metal industries also has almost similar contribution in the district and State's output 3.18 per cent and 2.15 per cent, respectively. 9/13 .

The above description of the comparative pattern of contribution of individual industry groups at the district level in Ghaziabad and the State level in Uttar Pradesh can now be summarized as follows :

- 1) In terms of number of registered factories the industrial structure of Ghaziabad is markedly different from that of the State. Engineering group of industries, consisting of metal products, basic metals, machinery (including electrical machinery) claim 40 per cent of district's registered factories, in the State these industries together have around 22 per cent of the registered factories. Food manufacturing industries on the other hand claim the largest number of factories (28 per cent) in Uttar Pradesh, the corresponding percentage for Ghaziabad district is four only.
- 2) In terms of employment, the three most important industries of Ghaziabad district are textile products, non-metallic mineral products and food products, together contributing 43 per cent of total employment. Metal products and machinery units have another 9 and 7 per cent of employment. At the State level, agro-based industry groups, mainly food products, alone contribute 33 per cent of employment. Textiles and non-metallic mineral products contribute another 10 and 5 per cent. Metals and machinery are less important with 2.35 and 4.72 per cent share.
- 3) In terms of value of output food products has largest contribution (22.77 per cent) in the State; in Ghaziabad, it contributes only 3.57 per cent. The largest contributer

to output in Ghaziabad is beverages (1975 per cent). Non-metallic mineral products come second with 14.23 per cent (State 8.65 per cent), and textile come next with 16 per cent (State 8.63 per cent), chemicals and metal based industries contribute almost similar percentage in the State's and Ghaziabad's industrial structure.

4.3. Industrial Specialisation of Ghaziabad

It is difficult to say precisely, on the basis of above discussion, as to how different Ghaziabad's industrial structure is from that of the State, particularly when different indicators of the structure yield somewhat different picture. An overall measure of such difference could be attempted with the help of coefficients of specialization,² which summarizes the differences in proportions of individual industries between the two situations, and indicates whether the one structure is as well diversified as the other. Here, taking the State's industrial structure as the limit for diversification,

² Papola, T.S., Spatial Diversification of Manufacturing Industries, in Studies on Development of Uttar Pradesh, Giri Institute of Development Studies, Lucknow, 1979, p.185.

the coefficient could be measured in terms of the following formula :

$$SJ = \sum_{i=1}^n \frac{e_{ij}}{EJ} - \frac{E_i}{E}$$

where,

- e_{ij} = employment in i^{th} industry in the j^{th} district
- EJ = employment in all industries in the j^{th} district
- E_i = employment in i^{th} industry in the state
- E = employment in all industries in the state

The value of the coefficient ranging between zero and one will indicate how specialized the districts' industrial structure is in comparison to that of the State'. Zero value of the coefficient would imply that the different industries have similar proportions in the two situations and therefore the district's structure is as diversified as of the State and a coefficient approximating to one would imply that district's structure is highly specialized as compared to that of the State.

The coefficient of specialization for Ghaziabad district computed on the above basis using employment proportions of different industries calculates to 0.05. Thus, the industrial structure of the district could be said to be similar to that of the State, or similarly diversified as of the State.

4.4. Industrial Base of the Ghaziabad District

The industrial structure of an area is constituted by a larger number of industries, but all of them do not have similar significance. In any situation a group or a few groups of industries constitute the industrial base of the region. Such industries could be descriptively identified on the basis of two criteria. One, location specificity and two, relative importance in the industrial structure of industries.

Let us first consider the criterion of location specificity. On this basis industrial base of a district can be defined as consisting of industries which show a relatively specialization in the district as compared to the larger region, the State. District with less diversified structure have only a few industries which could be considered their industrial base, even the districts with relatively diversified structure can not claim to have all the industries existing in their jurisdiction, as their industrial base. In a relative sense, the industrial base of a region is defined in terms of the industries in which a district has relatively higher level of activity, let us say more than proportionate share of employment than the average for all the

Table 4.3 : Localisation of Industries in the District Ghaziabad During the Year 1977 - 1978

Sl. No.	Industry Groups	Location Quo- tient (in terms of pro- duction workers only)
1.	Food Manufacturing Industries except Beverage Industries	0.30
2.	Beverage Industries	1.71
3.	Manufacture of Textile except Manufacturing of Textile not elsewhere classified	1.96
4.	Manufacture of Footwear, Other Wearing Apparel and made up Textile Goods	0.42
5.	Manufacture of Furniture and Fixtures	1.42
6.	Manufacture of Paper and Paper Products	0.29
7.	Printing Publishing and Allied Industries	0.90
8.	Manufacture of Rubber & Rubber Products	2.57
9.	Manufacture of Chemical & Chemical Products	1.44
10.	Manufacture of Products of Petroleum & Coal	1.15
11.	Manufacture of Non-Metallic Minerals Products except Products of Petroleum & Coal	3.21
12.	Basic Metal Industries	2.28
13.	Manufacture of Metal Products except Machinery and Transport Equipment	4.00
14.	Manufacture of Machinery except Electrical Appliances and Supplies	1.56
15.	Manufacture of Electrical Machinery Apparatus Appliances and Supplies	1.84
16.	Manufacture of Transport Equipment	0.76
17.	Gas Production and its Distribution	12.18
18.	Cold Storages	0.91
19.	Others	5.88

districts in the State.³ The identification of such industries can be done on the basis of location quotients, a statistical measure introduced by Professor Sargeant Florence, to study the localization of a particular industry or industrial group. This measure is computed for each industry by dividing the percentage of workers employed in the industry in the district, by the corresponding percentage at the State level.

The mathematical formula for the location quotient for an industry in a district is :

$$l_{ij} = \frac{e_{ij}}{e_j} / \frac{E_i}{E}$$

Where,

e_{ij} = employment in i th industry in j th district,

e_j = employment in all industries in j th district,

E_i = employment in i th industry in the State,

E = employment in all industries in the State.

Location quotient, is thus a relative measure of specialization and when it is more than one for an industry

³ Papola, T.S., Spatial Diversification of Industries (A Study of Uttar Pradesh), Chapter 1, p.19, 1980, and Mehta, M.M., "Structure of Indian Industries", Popular Book Depot, Bombay, p.160.

in a district, it implies that the industry has a higher proportion in the district's industrial employment than it has in the State's industrial employment. In that sense, industries with a higher than one value of quotient could be considered as having some difference of locational specificity and advantage in the district, and it is for that reason that they can be taken as to constitute the industrial base of the district.

Location quotients for different industries (at two digit level) in Ghaziabad district, with State of Uttar Pradesh as the base, are given in the Table 4.3.

The value of location quotients suggest that the Ghaziabad district has smaller or largest degree of specialization in 13 out of 19 industry groups. Six industry groups showed a high degree of specialization in the district with high location quotient of higher than two. These industry groups are : manufacture of rubber products, manufacturing of non-metallic mineral products except machinery and transport equipments, production of gas and its distribution and "others".

Seven other industry groups with location quotient ranging between 1.00 to 2.00 were : beverage industries, manufacture of textile, manufacturing of furniture and

fixtures, manufacturing of chemicals and chemical products, manufacturing of products of petroleum and coal, manufacturing of non-electrical machinery and electrical machinery.

It may be noted that the industrial base identified on the basis of values of location quotient of different industries do not necessarily follow the pattern of industries by their importance in the district. Some industries which have a high contribution in districts' industrial employment, do not feature in its industrial base, as the district does not necessarily specialize in them and therefore, their location quotients is low. Some others, with high location quotients are not really important industries in the district. For example, the industry group, production of gas and its distribution, has a very high location quotient in Ghaziabad, it had the highest location quotient of 12.8, but, in fact, this industry groups has highly insignificant contribution in employment (0.14 per cent), registered units (0.58 per cent), fixed capital invested (0.57 per cent), production workers (0.22 per cent) and value of production (0.10 per cent) in the district's industrial economy. While on the other hand, employment in manufacture of textile is 22.85 per cent, in chemicals and chemical products 4.78 per cent, in products of petroleum

and coal 5.36 per cent, in non-metallic mineral products 14.60 per cent, in basic metal industry 5.69 per cent, in metal products 8.56 per cent and in manufacture of machinery 4.26 per cent. Each of these industry groups thus has a significant contribution in employment though they have lower location quotient as compared to gas. Nevertheless, all these industries have a higher than one location quotient and thus constitute a part of industrial base of the district on that criterion. The food manufacturing industry on the other hand, has location quotient as low as 0.30, but its contribution to the district industrial employment is quite high at 10 per cent.

Thus, it looks that the identification of industrial base on the sole basis of the value of location quotient of individual industries, as is done in most of the studies on localization, would prove inadequate and misleading. Nevertheless, it is logical to accept the value of location quotient as a necessary criterion for inclusion of an industry in the industrial base of a region. But it must be supplemented by the sufficient condition that the industry also has a significant contribution in the industrial structure of the region. Using

Table 4.4 : Industry-wise Percentage Distribution in the Ghaziabad District

Product Group	Units (in numbers)		Employment (Average No. of persons working)		Capital (Fixed Capital)		(Value of production and job work done	Out - Put 1979
	1976	1979	1976	1979	1976	1979		
Agro-based	5.36	5.68	9.47	9.75	28.51	28.41	22.23	22.94
Textile based	5.89	9.02	26.93	28.44	28.00	29.91	20.15	19.58
Forest based	6.61	6.01	2.47	2.81	1.54	1.93	1.85	1.97
Live-stock based	0.36	0.67	0.05	0.37	0.01	0.07	0.08	0.31
Mineral based	3.21	3.00	4.69	5.63	2.03	2.34	2.02	1.98
Chemical based	9.81	11.18	6.35	7.18	4.11	4.99	4.78	7.54
Engineering based	63.04	58.93	45.23	43.61	22.88	30.79	37.77	44.35
Miscellaneous Industries	5.71	5.51	4.80	2.17	12.93	1.56	11.22	1.33
Total	100	100	100	100	100	100	100	100

Source : Office of the Chief Inspector of Factories, Kanpur.

these two criteria, the industrial base of Ghaziabad district can be considered to constitute of the following industries : basic metal, metal products, all types of machinery, non-metallic mineral products and textiles.

4.5. Recent Trends in Industrial Structure

The analysis so far has been based on the ASI data for the year 1977-78. We shall now examine the changes in the industrial structure in terms of registered number of factories, employment, capital and production during a four year period 1976-79, for this purpose we are using here the official data supplied by the Chief Inspector of Factories Office, Kanpur. On the basis of this data attempt has also been made to study the role of large and small scale industries in the district. The latest figures available for the district are of 1979 and the earliest figures for the year 1976, when the Ghaziabad district was formed.

4.5.1. Industry Groups

Due to limitations of data, change in structure of industries have been studied in terms of 8 broad industry groups : agro-based, textile based, forest based, live-stock based, mineral based, chemical based, engineering

based and miscellaneous industries.

The industrial structure of Ghaziabad district has been characterised by the dominance of engineering based industries. In 1976 they claimed 63 per cent of the registered factories, 45.23 per cent of employment and 22.88 per cent of capital of all industries in the district. The production by these industries for the same year, including job work done by industry for others, was valued 37.77 per cent of the total industrial production in the district. The industry has retained its relative importance over the period, though it seems to be undergoing some changes in the size structure, technology and productivity. It has shown a decline in its shares in registered units and in employment in the year 1979 and an increase in the value of capital and production. The percentage of registered factories in engineering group declined from 63.04 per cent in 1976 to 58.93 per cent in 1979 and employment from 45.23 per cent to 43.61 per cent. On the other hand, the share of this industry in the invested capital increased from 22.88 per cent to 30.79 per cent and in value of production from 37.77 to 44.35 per cent.

Agro-based and textile industries maintained their relative share in units, employment, capital and production.

In agro industries, there is a negligible rise in share of registered factories, employment and value of production, their share in value of invested capital, however, remained constant (28.51 per cent in 1976 and 28.41 per cent in 1979). In the textile industry the percentage share in the registered factories increased from 5.89 per cent to 9.02 per cent, the shares in employment, capital has showed but a little increase.

The chemical based industries improved their relative position in the industrial structure of the district in all respects. The percentage share of chemical based industries in registered units increased from 9.82 per cent in 1976 to 11.18 per cent in 1979, in employment from 6.35 per cent to 7.18 per cent, in capital from 4.11 to 4.99 per cent, and in production from 4.78 to 7.54 per cent.

The contribution of forest based industries in the district has increased although nominally in 1979 over 1976. The percentages of employment rose from 2.47 to 2.81, of capital from 1.54 to 1.93, and of output from 1.85 to 1.97. The share of this group in the registered unit declined by around 0.5 per cent during the period.

The miscellaneous industry group has shown a drastic decline in its relative importance during the period. Its share in value of production, for example, declined from 11.22 per cent in 1976 to 1.33 per cent in 1979. It is suspected, however, that this change was mainly accounted for by a reclassification of units under some other category during the period, and is therefore, of not much analytical significance.

The mineral based industries have also managed to retain their relative position in the district at least in terms of the value of capital and persons employed. In employment, particularly they have shown a significant rise in their share from 4.69 per cent in 1976 to 5.68 per cent in 1979. They have, however, declined in relative importance in terms of number of units and value of output, marginally.

Live-stock based industries which have a relatively unimportant place in the district, contributing less than one per cent of units, employment, capital as well as output, has improved their position significantly during the period.

The above description of changes is obviously limited in scope and coverage for drawing any meaningful conclusion from trend in the industrial structure of the district. For, the period covered is too short and industry groups considered rather too broad and aggregate. Yet, assuming that the four years considered form a part of the continuous series of changes, and intra-group variations are not significant, one can draw some general conclusions. First, the dominance of engineering based industry is likely to increase rather than decline, though the industry is generally becoming more capital intensive and average size of its unit is also increasing. Second, the share of chemicals, forest based and live-stock based industries is increasing, though the last industry is still a minor industry in the district. Third, agro-based industries and textiles are likely to retain their relative position while that of mineral based industries may decline. Fourth, these changes are still not very significant and the industrial structure of district in 1979 revealed broadly the similar relative positions for different industry groups as in 1976,

4.6. Large and Small Sectors

Now we will look into relative roles of the small and large scale sectors in the industrial sector of Ghaziabad district, in terms of their contributions to number of units, employment, capital and output, and any changes that may be discernible between 1976 and 1979. This exercise is again undertaken for each of the 8 broad industry groups mentioned earlier. In the aggregate of all industries, the small scale industries contribute over four fifths of the total number of units, around one third of employment and account for one tenth of capital invested and one fifth of the total industrial output of the district in the year 1976. During 1976-79, the position broadly remained the same with the marginal decline in the small sectors share in number of units and a marginal increase in employment, capital and output.

These overall proportions of small and large sectors hold for most of the industry groups individually also. But, within this general trend there are significant variations. Live-stock based units, though very few in numbers, are all in the small scale sector. 83 per cent of the forest based units are in small sector contributing 68 per cent of employment, 39 per cent of capital

Table 4.5 : Percentage Contribution of Large and Small Scale Industries in Ghaziabad District

Industry Group	Units						Employment					
	1976			1979			1976			1979		
	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large
0	1	2	3	4	5	6	6	7	7	8		
Agro-based	56.67	43.33	61.76	38.24	7.55	92.45	15.45	84.55				
Textile based	81.82	18.19	85.19	14.81	9.20	90.80	16.30	83.70				
Forest based	89.19	10.81	83.33	16.67	70.30	29.70	67.93	32.07				
Livestock based	100	-	100	-	100	-	100	-	100	-		
Mineral based	72.22	27.78	66.67	33.33	35.17	64.83	26.94	73.06				
Chemical based	83.64	16.36	86.57	13.43	46.03	53.97	46.46	53.54				
Engineering based	86.69	13.31	83.29	16.71	46.32	53.68	46.35	53.65				
Miscellaneous Industries	96.88	3.12	93.94	6.06	35.00	65.00	79.92	20.08				
Total	84.82	15.18	82.80	17.20	32.19	67.81	35.23	64.77				

Contd.../-

Industry Group	Capital				Production			
	1976		1979		1976		1979	
	Small	Large	Small	Large	Small	Large	Small	Large
0	9	10	11	12	13	14	15	16
Agro-based	1.16	98.84	1.71	98.29	1.37	98.63	2.09	97.91
Textile based	1.56	98.44	3.20	96.80	5.32	94.68	11.38	88.62
Forest based	42.89	57.11	38.77	61.23	66.00	34.00	68.02	31.98
Livestock based	100	-	100	-	100	-	100	-
Mineral based	10.27	89.73	17.38	82.62	18.70	8.13	9.28	90.72
Chemical based	23.26	76.74	26.45	73.55	49.03	50.97	37.50	62.50
Engineering based	22.99	77.01	20.73	79.28	33.05	66.95	28.28	71.72
Miscellaneous industries	5.65	94.35	55.60	44.40	9.02	90.98	74.76	25.24
Total	8.58	91.42	11.23	88.77	18.86	81.14	20.90	79.10

Source : Office of the Chief Inspector of Factories, Kanpur.

and 68 per cent of output. Of the chemical based units 87 per cent are in small scale sector, but their contribution to employment, capital and output is somewhat lower at 46, 26 and 38 per cent. Similar is the situation in the engineering based industry with 83 per cent of units in the small sector accounting for 46 per cent of employment, 21 per cent of capital and 25 per cent of output. Of the textile units again 85 per cent are in the small sector with very low contributions to employment (16 per cent), capital (3 per cent) and output (11 per cent). The only two industry groups which have over one third of units in large sector are agro-based (38 per cent) and mineral based (33 per cent).

Thus, not only different industry groups have significantly different proportions of the large and small sectors, they also show widely varying relationship among the employment, capital and output. Further, the role of small sector has shown a significant increase in a short period of four years 1976-79, in terms of contribution to employment and output, in agro-based industries and textile based industries, and a decline in forest based industries and mineral based industries. Thus, the large-small structure is also undergoing changes in the individual industry groups. Overall, however, the share of employment in the small sector has increased

from 32 to 35 per cent and share in output from 19 to
21 per cent.

Chapter V

STRUCTURE OF INDUSTRIAL UNITS

For a number of aspects envisaged to be investigated in our study, particularly those relating to the entrepreneurs' initial motivations to start units in Ghaziabad, inter and intra industrial linkages, and the problems faced by the industrialists in establishing and running their factories, secondary sources do not provide relevant and adequate data. It was, therefore, considered necessary, as mentioned earlier, to collect them on the basis of a primary survey. The survey was conducted among a sample of units in Ghaziabad district, using a structured questionnaire personally administered. Information on objective facts relating to cost, raw material, marketing, use of incentives, and linkages with in the district and outside for intermediate products, and employment as well as entrepreneurs' own assessment and their preferences were thus collected.

5.1. The Sample

For the selection of the sample from the industrial units the list of factories registered with the Chief Inspector of Factories was allocated to their industry groups within Divisions 2 and 3 of the Standard Industrial Classification. Ghaziabad had in all 618 registered factories in the year 1977-78 which thus became the effective universe of the study. It was decided upon to take

a 20 per cent sample proportionately distributed among 10 major industry groups suitably devised by us but broadly conforming to the standard industrial classification. The clubbing together of two or more industry groups in certain cases was done where the industry groups either showed a product similarity or where the small size of total units would have left the sample size extremely small.

A 20 per cent sample out of the effective universe of 618 units would mean a sample size of 124 units. However, owing to unavoidable circumstances like closures, non-response both partial and total as well as non-traceability of some units as a result of incomplete and improper addresses, the size of the sample was forcibly reduced from the original 124 to 109 constituting only around 18 per cent of the universe.

The constraints of the overall sample also are reflected in the sample of individual industry groups in-so-far-as the numbers selected in different groups do not make uniform proportions to the number of existing units. Still, the number of factories selected in each industry group are found to follow the pattern of their relative importance.

Table 5.1 : Industry-wise Size of Total
and Sample Units

Indu- stry Code	Industry Groups	Universe	20% sample	Selected samples
20	Agro-based, food products	30	6	4
23	Textiles & textile products	43	9	6
28	Paper & paper products	48	9	6
30	Rubber: rubber & plastic products	39	8	6
31	Chemical & chemical products	48	10	13
33	Basic metal & alloys industries	114	23	21
34	Metal products & parts	78	16	15
35	Machinery & machinery tools	140	28	26
36	Electrical machinery	48	9	6
38	Miscellaneous	30	6	6
Total		618	124	109

Table 5.1 shows the number of existing factories existing in Ghaziabad in the various industry groups ranging from 20 to industry group 38 which constitutes the manufacturing activities.

The industry groups 23 and 26 both represent textile units while group 23 is manufacture of cotton textiles,

group 26 is the manufacture of textile products (including weaving apparel other than footwear). We have, therefore, merged these two groups together for our analysis and shall refer to it as textiles and textile products group throughout the study.

Industry group 27 (manufacture of wood and wood products furnitures and fixtures) had a very few units. Similarly the industry group 38 (other manufacturing industries) also had a rather small overall size. These industry groups, if taken separately, would have had a rather small sample size. At the same time industry group 32 (manufacture of non-metallic mineral products), though having a reasonably high number of units, posed the problem of both partial and total non-response from the entrepreneurs. It was ultimately decided to club these three groups together and present them as 'miscellaneous industry group' for the purposes of present analysis.

Given the overall sample proportion of around 18 per cent let us examine how sample proportions in each industry group conform to or depart from it.

In the reorganised grouping of units in 10 categories, sample in most groups has conformed to the overall sample proportions of 18 per cent. The non-response has led to some shortfall in the groups; food-products, paper and paper products, electrical machinery and textiles in each of which the sample constitutes between 12-14 per cent of the universe. On the other hand, in one industry group, chemical and chemical products the sample has been higher at 27 per cent, because certain units originally selected under some other group turned out to belong to this group on actual investigation.

The sample can thus be considered fairly representative of the industrial structure of Ghaziabad except for the one important omission of the units other than those registered under the Factories Act. Let us now turn to the description of some of the characteristics of the structure of industrial units in Ghaziabad, based on this sample. The main aspects covered in the present chapter include size characteristics and background of entrepreneurs.

5.2. Age Structure of the Units

To begin with let us see how old or new are the factory units in Ghaziabad. It is seen that 36 per cent

of the units are more than 10 years old and 64 per cent of the total units are more than 5 years old. There has been rapid growth in number of factories in the district during the last decade to the extent that around two-thirds of the units were established during the last 10 years and further over one-third during the last five years only. This pattern is generally observed in the case of industry groups individually as well. But in food products, textiles, paper and paper products, rubber products and electrical machinery group 50 per cent or more of the units had been established during the last 5 years. In any case in each of the ten industry groups, except in metal products, over half of the units and in all groups except metal products, machinery and electrical machinery, over two-thirds of the units were established during the last 10 years. Thus, overall, there has been an acceleration in the growth in the number of factories during the last decade and in a number of cases during the last five years.

5.3. Size Structure of Employment

The average size of employment of a unit in Ghazia-bad estimates to 26 workers. Thus the structure of units is pre-dominantly characterised by small size. As many

Table 5.2 : Age Structure of Sample Units

(in years)

Industry Code	Industry Group	Age of the Unit				Total
		1 - 2	3 - 5	6 - 9	10 +	
20	Agro-based, food product	2	1	1	-	4
23	Textile & textile products	2	2	-	2	6
28	Paper & paper products	-	4	1	1	6
30	Rubber: rubber & plastic product	1	2	1	2	6
31	Chemical & chemical products	1	4	5	3	13
33	Basic metal & alloys industries	1	5	7	8	21
34	Metal products & parts	1	1	5	8	15
35	Machinery and machinery tools	2	5	9	10	26
36	Electrical machinery	2	1	2	1	6
38	Miscellaneous	2	-	-	4	6
Total		14 (13.00)	25 (23.00)	31 (28.00)	39 (36.00)	109 (100.0)

as 64 per cent of the units employ less than 30 workers each. The factories employing 10-19 workers are the single largest group contributing 36 per cent factories in the sample. The units employing less than 10 workers

are only 16 per cent.* 27 per cent of selected factories in sample employed between 20-40 workers. Only 18 per cent of factories have an employment size of 50 or more workers.

There is a wide variation in the average employment size in different industries, and, of course, within each industry group there are significant inter unit variations in the size. The average size of employment in manufacture of machine and machine tools industries is the smallest at 15 workers, whereas the figures for manufacture of rubber products, and basic metal is the largest at around 50 workers. The other industries with an average of 30 or more workers per unit are : manufacturing of metal products, manufacturing of electrical machinery and basic metal and alloys industries. Most units in food products and machinery are small, employing around or less than 20 workers.

* Normally registered factories implies that at least 10 workers are employed in it. The rules regarding registration, state that, even if on any one particular day employment size had touched or exceeded 10 workers, the unit is bound to get itself registered. Subsequently, however, it may or may not stick to the ten workers rule. This is therefore, a common practice found among the industrial units of Ghaziabad. Yet another reason for a unit, having below 10 workers is the fact that an already registered unit, for certain reasons, cuts down its employment size but does not simultaneously apply to be struck-off from the list of registered units.

Table 5.3 : Distribution of Sample Factories by Employment Size

Sl. No.	Employment Size Groups	Industry Code Nos.									Total
		20	23	28	30	31	33	34	35	36	
1.	Below 10 workers	2	-	1	1	2	3	6	-	1	17 (15.60)
2.	10 - 19	1	2	2	1	4	2	6	15	1	38 (34.86)
3.	20 - 29	-	2	1	-	4	2	2	2	2	- 15 (13.76)
4.	30 - 39	-	1	-	-	2	7	-	3	1	- 14 (12.84)
5.	40 - 49	-	-	1	1	1	2	-	-	-	- 5 (4.59)
6.	50 +	1	1	1	3	1	6	4	-	2	1 20 (18.35)
7.	Total	4	6	6	6	13	21	15	26	6	6 109(100.00)
8.	Average employment	22	27	33	50	27	47	30	15	43	20 26

5.4. Structure of Units by Skill Composition

Like employment size there are significant differences in the skill composition of work force among different industries. Overall, slightly less than half the workers are unskilled in the entire work force of sample units, the rest being equally divided between skilled and semi-skilled. To the extent the skill composition of work-force reflects technology, it could be surprised that the industrial structure of Ghaziabad is on a reasonably high technological level with half of its workers being in the skilled or semi-skilled category.

Looking at the distribution of workforce in the categories of skilled, semi-skilled and unskilled workers in various industry groups, we notice that this pattern of skill composition avails in almost all of them. Textiles and miscellaneous groups, however, stand as exceptions in which around 80 per cent of the workers are in the categories of skilled and semi-skilled. On the other hand, the industry groups rubber and machinery and machine tools, have a relatively higher proportion of unskilled workers.

Table 5.4 : Distribution of Sample Units by Level of Skill

Indu- stry code	Industry Group	Skilled workers (in nos.)	Semi- skilled workers	Un- skilled workers	Total in no.	Total in percentage
20	Agro-based, food product	14 (17.95)	22 (28.20)	42 (53.85)	78	2.75
23	Textile and textile products	60 (38.96)	66 (42.86)	28 (18.18)	154	5.44
28	Paper & paper products	43 (23.11)	51 (27.42)	92 (49.46)	186	6.56
30	Rubber: rubber & plastic products	75 (26.98)	46 (16.55)	157 (56.47)	278	9.81
31	Chemical & che- mical products	67 (24.54)	77 (28.20)	129 (47.25)	273	9.64
33	Basic metal & alloys indus- tries	230 (28.01)	170 (20.71)	421 (51.28)	821	28.98
34	Metal products & parts	97 (25.00)	97 (25.00)	194 (50.00)	388	13.70
35	Machinery & machinery tools	88 (25.81)	70 (20.53)	183 (53.67)	341	12.04
36	Electrical ma- chinery	34 (16.04)	75 (35.38)	103 (48.58)	212	7.48
38	Miscellaneous	21 (20.59)	59 (57.84)	22 (21.57)	102	3.60
Total		729 (25.74)	733 (25.87)	1371 (48.39)	2833 (100.00)	100.00

5.5. Capital Structure of Sample Units

Like the employment structure the capital structure of industrial units in Ghaziabad is also dominated by small size groups. Over three-fourths of the industrial units have a fixed capital investment of less than Rs.5 lakhs and total productive capital of Rs.10 lakhs each. Units are almost evenly distributed among the different capital size groups, and each industry group has units belonging to the very small as well as the small and medium capital size groups. If the products of different units in an industry group could be assumed to be more or less homogeneous than one could infer that there is probably no unique size and technology to produce these items.

There are, obviously, variations in the capital size pattern of units among different industry groups. Fixed capital base of most units is very low (less than Rs.3 lakhs) in the case of food products, textiles, metal products, machinery and miscellaneous manufacturing group. A larger base (over Rs.5 lakhs) of fixed capital is a feature of a sizeable proportion of units in the case of industry groups paper and paper products, basic metal and electrical machinery.

Table 5.5 : Distribution of Sample Units by size of Capital

Indu- stry Code	Industry Group	Fixed Capital					Total Capital				(In Rs.)
		Upto 1 lakh	1 to 3 lakhs	3 to 5 lakhs	5 & more lakhs		Upto 3 lakhs	3 to 5 lakhs	5 to 10 lakhs	20 & more lakhs	
20	Agro-based, food products	1	2	-	1	1	1	1	1	-	-
23	Textile & textile products	2	2	2	-	1	3	2	-	-	-
28	Paper & paper products	-	3	-	3	1	2	1	1	1	1
30	Rubber,rubber & plastic products	1	1	2	2	1	1	2	-	2	2
31	Chemical and chemical products	4	3	4	2	1	4	3	3	2	2
33	Basic metal & alloys Industries	1	7	4	9	2	3	6	4	6	6
34	Metal products & parts	5	3	3	4	4	3	4	2	2	2
35	Machinery and machinery tools	8	12	4	2	14	4	6	1	1	1
36	Electrical machinery	-	2	2	2	-	3	2	1	-	-
38	Miscellaneous	3	1	1	1	5	1	-	-	-	-
Total		25	36	22	26	30	25	27	13	14	
		(22.94)	(33.03)	(20.18)	(23.85)	(27.52)	(22.94)	(24.77)	(11.93)	(12.84)	

In terms of the size of the total productive capital, two industry groups, machinery and miscellaneous products have most of their units in very small size group, of less than Rs.3 lakhs each. On the other hand, units in chemical and basic metals have tended to have a relatively larger base of total productive capital.

5.6. Output Structure of Sample Units

The size pattern of the sample units has also been studied on the basis of output by distributing factories among various size groups of output ranging from upto Rs.3 lakhs to Rs.50 lakhs and above. Here again the units are distributed very well among the different size groups, without showing any significant tilt in favour of any one size group. Still, small size dominance is visible here also.

Thus only around 28 per cent of units had a output size beyond Rs.20 lakhs and 10 per cent beyond Rs.50 lakhs each. A very small percentage (3 per cent) of sample units are, in fact, large sized with an output of over Rs.100 lakhs each. These units are from industry groups, chemical and chemical products, basic metal and alloys and manufacture of electrical machinery. The

Table 5.6 : Distribution of Sample Units by Output Size

Industry Group	Less than 3 lakhs	3 to 5 lakhs	5 to 10 lakhs	10 to 20 lakhs	20 to 50 lakhs	50 lakhs & more	Total units	Total output	Average output per industry group	Average output per worker
0 Agro-based, food products	-	-	1	1	2	-	4	10622342	2655585.50	120708.43
3 Textile & textile products	1	2	-	2	1	-	6	5316434	969405.66	36581.34
8 Paper & paper products	2	1	1	-	1	1	6	11958131	1993030.10	60394.85
0 Rubber, plastic products	1	-	1	2	-	2	6	18412200	3068700.00	61579.26
1 Chemical & chemical products	2	1	-	4	4	2	13	38107203	2931323.30	110136.42
3 Basic metal & alloys industries	2	-	4	4	7	4	21	71997690	3428461.40	72872.15
4 Metal Products & parts	2	3	2	4	4	-	15	22049082	1469938.80	48889.31
5 Machinery & machinery tools	9	4	6	6	1	-	26	18078752	695335.61	46594.72
6 Electrical machinery	1	1	2	-	-	2	6	21961020	3660170.00	86121.64
8 Miscellaneous	4	-	2	-	-	-	6	1802239	300373.16	15671.64
Total	24 (22.02)	12 (11.01)	19 (17.43)	23 (21.10)	20 (18.35)	11 (10.09)	109 (100.00)	220805143	1928282.57	67114.02

concentration of chemical, basic metal and metal products units is in more than Rs.10 lakhs output group, while units in machinery and machine tools and other manufacturing industries have figured mostly in less than Rs.10 lakhs output group. Out of a small sample of four units in the agro-based industries, three-fourths of the units are placed in more than Rs.10 lakhs output group.

Looking at figures for average size of output per industry group, we find that manufacture of electrical machinery, basic metal and alloys industries have relatively large sized units followed by industries of rubber and chemicals. Textile industries, machinery and machine tools and miscellaneous manufacturing industries are the three industry groups in which average output per unit was low at less than Rs.10 lakhs.

The average size of output per worker has varied widely from industry to industry. A few industries like agro-based and chemical and chemical products have a relatively very large output but very low employment per unit resulting in high value of output per worker (over Re.1 lakh). On the other hand, manufacture of

textiles, metal products, machinery and miscellaneous products show a high employment per unit, in relation to their output size, thus yielding a low value of output per worker (less than Rs.50 thousand).

5.7. Characteristics of Entrepreneurs

Entrepreneurship is a crucial factor in accelerating industrialisation. We, therefore, look at some aspects of the background of entrepreneurs operating in Ghaziabad district. For this purpose we collected information on certain characteristics and motivations of the entrepreneurs of the sample factories. Here we are presenting information relating to the domicile status, educational and occupational background of the entrepreneurs.

5.7.1. Age and Education

Out of the total entrepreneurs around 38 per cent are in the age group 35-45 years while 20 per cent entrepreneurs are over 50 years of age. The age group below 30 years constitutes only 10 per cent. Thus around 70 per cent of the entrepreneurs fall in the age

Table 5.7 : Industry-wise Classification of Entrepreneurs by Age

Industry	Industry Group	Years										Total
		18 -	25 -	25 -	30 -	30 -	35 -	35 -	40 -	40 -	45 -	
Code												
20	Agro-based, food products	-	-	-	-	-	1	-	1	2	2	4
23	Textile and textile products	-	-	2	3	-	-	-	1	1	1	6
28	Paper and paper products	1	-	1	1	1	-	-	2	2	6	6
30	Rubber: rubber & plastic products	-	1	1	-	-	4	4	-	-	4	6
31	Chemical and chemical products	-	1	-	1	1	6	3	3	2	2	13
33	Basic metal and alloys industries	2	-	5	4	6	6	1	1	3	3	21
34	Metal products and parts	-	1	3	4	-	-	2	2	5	5	15
35	Machinery & machinery tools	1	2	4	5	6	6	3	3	5	5	26
36	Electrical machinery	1	-	2	1	1	-	-	1	1	1	6
38	Miscellaneous	-	1	2	2	-	-	-	1	1	1	6
Total		5 (4.59)	6 (5.50)	20 (18.35)	22 (20.18)	20 (18.35)	14 (12.84)	22 (20.18)	14 (12.84)	22 (20.18)	22 (100.00)	109

group between 30 to 50 years. A similar pattern is by and large observed in the various industry groups as well.

All entrepreneurs, except one in the manufacturing of food products and beverages industry, in the sample are literates. Most of the entrepreneurs are well educated : 46 per cent of them are either graduate or post-graduates. In addition, 23.85 per cent had a technical degree or diploma. Thus 70 per cent entrepreneurs are endowed with 'higher' education.

The 29 per cent entrepreneurs who had education upto the level of intermediate only are mostly those who had migrated from west-Pakistan at the time of Partition of the country. These migrant entrepreneurs, had some experience in manufacturing and trading and after resettling at Ghaziabad or nearby places started various industrial units.

Looking at the industry-wise education level it is observed that the industries manufacturing chemical and chemical products, basic metal and alloys, metal products and parts and machinery and machine tools have entrepreneurs with higher educational levels than those

**Table 5.8 : Industry-wise Classification of Units
by Educational Level of Entrepreneurs**

Indu- stry Code	Industry Group	Illि- terate	Basic	High Sch- ool+ Inter- media- te	gra- dua- tion	Post gra- dua- tion	Tech- nical educa- tion	Total
20	Agro-based, food products	1	-	-	1	2	-	4
23	Textile & textile products	-	-	2	3	-	1	6
28	Paper and paper products	-	-	3	3	-	-	6
30	Rubber: rubber & plastic products	-	1	2	-	2	1	6
31	Chemical and chemical products	-	-	1	5	1	6	13
33	Basic metal & alloys industries	-	-	5	8	2	6	21
34	Metal products & parts	-	-	5	4	1	5	15
35	Machinery & machinery tools	-	-	8	9	4	5	26
36	Electrical machinery	-	-	3	-	1	2	6
38	Miscellaneous	-	-	2	3	1	-	6
Total		1	1	31	36	14	26	109

in other industries. In the chemical and chemical product groups 6 out of the total 13 entrepreneurs are in the category of graduates and post-graduates and another six are technical graduates. Only one entrepreneur has studied only upto intermediate. The technical graduate and graduates are found to dominate in basic metal and alloys industries, metal products and parts and manufacturing of machinery and machine tools.

5.7.2. Native Place of Entrepreneurs : Local or Non-local

Most of the entrepreneurs are local : out of the total sample of 109, 56 entrepreneurs belonged to Ghaziabad district itself (in this category of local entrepreneurs we have also included all those industrialists who have come from Pakistan at the time of Partition and have finally settled in Ghaziabad). Belonging to and settled in Ghaziabad, it was natural for the local entrepreneurs to first explore the opportunities for starting an industrial unit there. In this process they were further encouraged by certain other factors such as facilities provided by the Uttar Pradesh Government and other agencies. Besides an industrial atmosphere had already been built by the early 40's as has already been described in chapter three.

Still slightly less than one-half of the entrepreneurs are from the non-local category. The entrepreneurs from Delhi, who contributed around one-seventh of the total were primarily attracted to this district due to industrial over-crowding and lack of space for expansion purpose and for establishment of new factories in Delhi. Ghaziabad besides the proximity to Delhi, also provides certain other advantages as described above, and therefore, they found the district as an ideal site to establish their factories. The power situation was good in the State at that time, and the district had been relatively free of any industrial unrest.

A good number, 21 per cent of the total and 44 per cent of the non-local entrepreneurs belonged to places other than Delhi and Uttar Pradesh. Most of them came from West Bengal, the upsurge of Naxalite activity in West Bengal created an atmosphere of industrial insecurity which forced a number of entrepreneurs to shift their industries from West Bengal. By that time, both, Ghaziabad in Uttar Pradesh as well as Faridabad in Haryana were the up and coming industrial complexes in North India almost free of political or industrial unrest. The proximity to Delhi was an additional advantage since Delhi is the biggest marketing centre of northern India.

Table 5.9 : Industry-wise Distribution of Units by Domicile Status of Entrepreneurs

Indu- stry Code	Industry Group	Local	Non- local	Non-Local			Total
				Delhi	With- in the state	Out- side the state	
20	Agro-based, food products	2	2	2	-	-	4
23	Textile and textile products	5	1	1	-	-	6
28	Paper and paper products	-	6	2	2	2	6
30	Rubber: rubber & plastic products	3	3	1	2	-	6
31	Chemical and chemical products	4	9	3	2	4	13
33	Basic metal & alloys industries	10	11	1	3	7	21
34	Metal products and parts	8	7	4	2	1	15
35	Machinery and machinery tools	15	11	-	2	9	26
36	Electrical machinery	5	1	-	1	-	6
38	Miscellaneous	4	2	2	-	-	6
Total		56	53	16	14	23	109

At the same time Uttar Pradesh was offering numerous incentives to entrepreneurs as well. The overall impact of these developments played a crucial role in attracting a number of industrialists to settle in Ghaziabad.

5.7.3. Family Occupation

The pattern of occupational background of the sample entrepreneurs clearly suggests that most entrepreneurs come from families with business and trading background. Entrepreneurs with such background constituted 55 per cent of the total. The next important source of entrepreneurs, contributing 28 per cent, of them was the families with an industrial background, 11 per cent came from the 'service' class families and 5 per cent from the agricultural background.

The above pattern of origin of entrepreneurs was observed in most industry groups individually as well. Yet a few industries showed a deviation from overall pattern. For example, in chemical, basic metals, electrical machinery and miscellaneous manufacture, most entrepreneurs had other than trading family background. Agriculturists tend to go more often into basic

Table 5.10 : Industry-wise Distribution of Units
of Family Occupation of Entrepreneurs

Indu- stry Code	Industry Group	Busine- ss/trad- ing	Indus- trialist	Agricul- turist	Service class	Total
20	Agro-based, food products	3	1	-	-	4
23	Textile and textile products	6	-	-	-	6
28	Paper and paper products	2	2	-	2	6
30	Rubber: rubber & plastic products	6	-	-	-	6
31	Chemical & chemical products	5	7	1	-	13
33	Basic metal & alloys industries	9	7	3	2	21
34	Metal products and parts	11	2	-	2	15
35	Machinery & machinery tools	14	7	1	4	26
36	Electrical machinery	2	2	1	1	6
38	Miscellaneous	2	3	-	1	6
Total		60	31	6	12	109

metals, and those belonging to 'service' families into the manufacture of machinery. Rubber products and textile units seem to have entrepreneurs always from trading families. The entrepreneurs from industrialist families seem to most often go into chemicals, basic metals, and machinery.

5.7.4. Past Experience

To run a factory, experience specially in similar lines of activities is quite useful. Of the 109 entrepreneurs studied, only 39 had the present factory as their first enterprise. The remaining had some experience of one or the other type for varying periods.

The type of experience varies in terms/both the number of years and the capacity in which the present entrepreneur has served in earlier unit(s). Looking at experience from the point of view of time it is found that around 40 per cent entrepreneurs have an experience of five or more years in the same line of activity. Further observation brings to light the fact that these entrepreneurs had earlier been associated with their respective units either in the capacity of suppliers of materials, or in managerial capacity and in some cases

even skilled technicians. The maximum number of these entrepreneurs come in the category of those who had been serving similar units as technical experts. Experience of the same industry coupled with the various incentives provided by the government prompted them to start their own units in Ghaziabad.

Chapter VI

GROWTH PERFORMANCE OF INDUSTRIES IN GHAZIABAD

It has been observed earlier that the industrial activity has grown at a rapid pace in Ghaziabad in recent years. We have already seen that new industrial units have been established in larger number in recent years than in the earlier years. In this chapter, we now examine the performance of industrial units in different industrial groups in terms of the growth of output, employment and capital, during the period 1971-79.

6.1. Growth of Industries During 1971-79

A general and brief idea of the pattern of growth in different variables in each of 10, two-digit level industries over the period of study i.e. 1971-79, can be had from the figures in Table 6.1. The aggregate output has recorded a growth rate of 11 per cent per annum and value added has also grown at a similar rate. By any standard, it could be considered a reasonably high growth particularly when during the same period the corresponding rates of growth have been around half of that figure in the State and the country. Employment has, however, increased at a slower rate of around 5 per cent, but fixed capital has also grown at a relatively lower rate of 6.75 per cent in the industrial units of Ghaziabad.

Table 6.1 : Average Annual Growth of Industries in Ghaziabad (Sample Units)

Industry Code	Industry Group	Output	Workers	Fixed capital	(percentages)	
					Value added	
20	Agro-based, food products	11.80	18.96	14.29	40.68	
23	Textile and textile products	18.75	11.89	34.28	18.98	
28	Paper and paper products	14.30	9.21	1.63	3.19	
30	Rubber : rubber and plastic products	26.27	7.89	1.99	16.61	
31	Chemicals and chemical products	12.62	5.79	6.65	10.21	
33	Basic metal and alloys industries	11.60	4.02	5.72	18.98	
34	Metal products and parts	11.56	2.86	16.59	8.40	
35	Machinery and machinery tools	3.66	1.95	2.47	2.76	
36	Electrical Machinery	7.42	3.12	2.12	5.79	
38	Miscellaneous	3.22	5.56	12.83	3.96	
All Industry		11.27	4.80	6.75	10.92	

Overall, thus the industrial growth in the district is characterised by (i) a fast growth of output, (ii) value adding nature of industrial activity, (iii) a relatively low increase in capital intensity, and (iv) a fast increase in both labour and capital productivity. Within the overall pattern of growth of different variables there are found interesting variations among different industry groups. Textiles and textile products, paper and paper products, and rubber products have registered a higher than average growth of output. Rubber industry, in particular, has experienced an exceptionally high growth of 26.27 per cent in output. Industry groups, food and food products, chemicals, basic metals and metal products, had a growth of output around the overall average of eleven per cent. Manufacturing of general machinery, and miscellaneous products, registered a particularly low growth of output, while, electrical machinery group showed a reasonably good, but lower than average growth.

In terms of value added, industry groups, food products, textiles, rubber products and basic metals, have grown relatively faster, with a higher than average growth rate of value added (around 11 per cent). Of these, food and food products show an exceptionally high growth rate

of over 40 per cent per annum. Chemical and chemical products has a growth rate similar to the all industry average. The rest five industry groups had a very low growth of value added. Among these, general machinery, paper and paper products and miscellaneous products have shown a growth rate of less than four per cent, while electrical machinery a growth rate of around 6 per cent. Inter-industry differences are thus sharper in growth of value added than that of output, thus underlying a differential value adding nature of the growth of different industries. A high value adding character emerges in food and basic metals where the growth in value added is much higher than the growth in output. In textile the growth rates of output and value added are around the same. In all the other industry groups the rate of growth of output is higher than that of value added. Rubber and paper products industries in particular seems to be growing more material intensive industries over the years.

Fixed capital has on the whole shown a low level of growth with the all industry average of around 6.75 per cent. The overall average is depressed particularly due to very little expansion in the capital base of units in industry groups paper and paper products, rubber products and general and electrical machinery. However, exceptionally

high growth of fixed capital is observed in the case of textiles (34.28 per cent), metal products (16.59 per cent) and food products (14.29 per cent).

Employment in the sample units grew at an average rate of 4.80 per cent per annum. Relatively high growth of employment was observed in food and textiles only; paper and rubber products come next with higher than the all-industry average growth in employment. Machinery and machine tools units showed lowest employment growth, but then their growth has been low in terms of other variables, output, value added and capital also.

A comparison between the growth of rates of fixed capital and employment gives us an indication of the changes in the degree of labour or capital intensity of the industry groups. In two industry groups, namely textiles and metal products, the fixed capital growth has been at a faster rate than their growth in employment. These industry groups are growing more capital intensive over the years. On the other hand, we have the industry groups, food products, paper products and rubber products in which a reverse trend is observed : a high growth in employment than in fixed capital. These industry groups thus are becoming more labour intensive,

On the basis of a comparison between the growth rates of output and value added with respect to growth rate of employment, industry groups; rubber products, metal products, electrical machinery, basic metals and chemicals emerge as industry groups with rising labour productivity. Similarly, a comparative study of changes in output and value added with that in fixed capital suggests that paper and paper products, rubber, chemicals and basic metals industries have registered an increase in their capital productivity. However, in the industry groups textiles, metal products and the miscellaneous industries a decline in capital productivity seems to be taking place.

Viewing the situation where in all the four variables are taken together food products and textiles have registered a higher growth in terms of all variables. However, two points are striking; In the case of food products the growth rate of value added is very high as compared to the growth of output, whereas in the case of textiles the growth of fixed capital is extremely high as compared to the growth of workers. This trend suggests that the growth in textile units is being brought about by employing more capital intensive technology. In the case of food products the difference between the growth rates

of output and value added is suggestive the fact that the profit margin of the food products industries is increasing. The cost of the basic raw material used for production is low as compared to the price of the finished products.

On the other extreme we have the industry groups general machinery and electrical machinery where the growth rates of all four variables have been lower than the all industry average. Machinery units occupy the first position from the point of view of number of units existing in the district. As a result, there is a keen competition among them which partly brings down the margin of profit. Moreover, the engineering units have been subject to slumps from time to time and that too have affected their growth. Chemicals and chemical products is the only industry group which has experienced a growth of all four variables at around the same rate as obtained at the all industry level.

6.2. Structure of Growth Rates

So far we have dealt with the average growth rate in some important variables in each industry. It is worthwhile to look at the structure of growth rates among the

units in different industries. Here, we have confined the analysis of growth rates only to output and employment.

6.2.1. Output

For this analysis, 16 factories have been deleted from 109 factories due to incomplete information. Therefore, the analysis has been confined to 93 sample factories only.

In aggregate, 12 per cent industries have experienced negative growth. 43 per cent units have shown positive but low growth rate, i.e. below 10 per cent over the period 1971-79; around 24 per cent of units experienced a growth rate of 10 per cent to 30 per cent, and 13 per cent had a very high growth rate of 50 per cent and more per annum.

As we have seen earlier, textiles, paper and rubber industry groups experienced a high average growth rate of output. But it is not necessarily due to a uniformly high rate of growth in all or most units. In paper industry, for example, most units had a low growth, of the 6 factories in the sample two factories had showed a negative growth and three experienced a growth rate of less than 5 per cent. Only one unit recorded over 100 per cent growth and pushed the average growth rate of industry high.

Table 6.2 : Industry-wise Output Growth Rates

Industry Code	Industry Group	Negative growth	Below 5%	10%	20%	30%	50%	75%	100%	No information	Average
20	Agro-based, food products	-	1	-	1	-	1	-	-	1	11.80
23	Textile and textile products	-	1	-	1	-	-	-	1	2	18.75
28	Paper and paper products	2	3	-	-	-	-	1	-	-	14.30
30	Rubber, rubber & plastic products	-	-	1	2	1	1	-	-	1	26.27
31	Chemical & chemical products	-	4	-	-	2	1	1	2	3	12.62
33	Basic metal and alloys industries	-	2	8	2	3	1	-	2	2	11.60
34	Metal products and parts	1	2	4	2	2	-	1	1	1	11.56
35	Machinery & machinery tools	4	8	3	2	1	2	2	-	3	3.66
36	Electrical machinery	-	3	-	1	-	1	-	-	1	7.42
38	Miscellaneous	2	-	-	2	-	-	-	-	2	3.22
	All Industry	11	30	10	14	8	8	4	1	7	11.27

In the medium growth rate category are the industry groups; food products, chemicals, basic metal and metal products. Units in these industries are generally evenly distributed in various growth rate groups. Yet in chemical products group the average is mainly a result of most units being either in very low (below 5 per cent) or very high (over 100 per cent) growth range. Similarly in basic metals, over half the units have experienced very low (below 5 per cent) or negative growth rate, but the average has been maintained due to relatively high growth of a few units.

Machinery, electrical machinery and miscellaneous manufacturing industries have experienced low average growth rates of output. In machinery group the overall growth rate is low at 3.66 per cent inspite of the fact that quite a few units have achieved over 20 per cent growth per annum in their output, because a majority of the units either had a less than 5 per cent growth rate or a negative growth of output. In the group of miscellaneous industries even though half the units have grown at 10 to 20 per cent, since the other half of the units have had a negative growth rate, the average for the group turns out to be the lowest at 3.22 per cent.

6.2.2. Employment

Looking at the distribution of factories by growth rates of employment (Table 6.3) we find that around 68 per cent of the factories experienced either lower than 5 per cent growth or no growth or decline in employment. Despite that, the average growth rate of employment in aggregate has been around 5 per cent because of the fact that around one-fifth of the factories have experienced over 10 per cent growth in employment.

In two industries with high growth of employment, food products and rubber products, the units are distributed evenly among the different growth rates. In textile and paper, the other industries with a high growth of employment, most units are in low, 'no growth' or negative growth categories but one unit having had fast growth in each of them has pulled the averages up. In the low employment growth category are the four industry groups namely basic metal, metal products, machinery and electrical machinery. In each of these groups the major concentration of factory units is in low growth rate range. In basic metals and machinery, a sizeable proportion of units have also experienced a decline in employment. In metal products quite a few units experienced no growth at all

Table 5.3 : Industry-wise Employment Growth Rates

Industry Code	Industry Group	Negative growth	Below 5%	5-10%	10-20%	20%+	No growth	No information	Average growth
20	Agro-based, food products	-	-	1	1	1	1	1	18.96
23	Textile & textile products	-	2	-	2	-	-	2	11.89
28	Paper and paper products	1	3	-	-	1	1	-	9.21
30	Rubber & rubber & plastic products	-	2	1	1	1	-	1	7.89
31	Chemicals and chemical products	-	6	3	1	1	-	3	5.79
33	Basic metal & alloys industries	3	11	1	3	1	-	2	4.02
34	Metal products & parts	1	7	2	-	-	3	2	2.86
35	Machinery & machinery tools	6	7	4	5	-	1	3	1.95
36	Electrical machinery	1	4	-	-	-	-	1	3.12
38	Miscellaneous	1	2	-	1	-	-	2	5.56
All Industry		13	44	10	12	7	6	17	4.80

in employment. In the miscellaneous group all units are either in low growth or in the negative growth category.

6.3. Size and Growth Relationship

Thus wide variations in growth rates of output and employment are found among units in most industries irrespective of whether the industry has experienced a low or a high growth rate. It is not as if the industry with low-average-growth rate has all the units in the low growth range and high-average-growth industry all its units in the high growth ranges. An implication of this pattern is that besides the general conditions of demand and input supply in an industry, the growth rate of a unit is significantly influenced by some of its own specific characteristics. One such characteristic is the size of the unit. We have, therefore, attempted to examine the relationship of size of units with growth rates in output and employment. Such an exercise also has significance in investigating into the tendency of concentration or equalisation of output and employment among different units. Operation of the law of Proportionate Effect which implies high growth of larger and

lower growth of smaller firms is the central hypothesis which is attempted to be tested in such analysis.

To see the relationship between size and growth, the total sample units have been distributed according to different sizes and growth rates of output and employment.

6.4. Size-Growth Relationship : Output

Arranging the units in the five size groups of output and distributing them into five categories according to the growth rate of output, we find that a consistent tendency of a fall in the rate of growth with increase in size of initial output. The output size group below 1 lakh has highest average growth rate with 37.50 per cent while only 6.08 per cent average growth is evident in output size of 20 lakhs and more. In the low growth category, a consistent rise in percentage of units was found with the rise of output size. In the high growth category a consistent fall in percentage of units with increase in output size is evident. In the medium growth rate category also, a consistent, though small, fall in the percentage of units with rise in output size is observed.

Table 6.4 : Growth Rate by Size of Output

Size Group	No. of Units	Low Growth			Medium Growth		High Growth		Average growth 50%
		Below 10%	10-20%	20-50%	10-50%	50%			
Below 1 lakh	11	27.30	18.20	18.20	36.40	36.40			37.50
1 - 5 lakhs	32	46.90	9.40	28.10	37.50		15.60		33.18
5 - 10 lakhs	20	60.00	20.00	10.00	30.00	10.00			24.43
10 - 20 lakhs	14	64.30	14.30	14.30	28.60	7.10			11.20
20 + lakhs	16	75.00	18.80	6.30	25.00	-			6.08
Total	93	54.80	15.10	17.20	32.30	12.90			11.29

There thus appears a negative relationship between growth rates and the size of output of units. Thus the law of Proportionate Effect does not seem to hold good in this case. To measure the same effect we also ran correlations between the output size and growth for the universe as a whole and for each of the industries which had at least ten units. The values of correlation coefficients also support our finding. The value of the correlation coefficient for all units together works out to -0.1438. Industry-wise correlations are also negative in each case.

6.5. Size-Growth Relationship : Employment

Let us now see the relationship, between size and the rate of growth of employment. For the purpose of the analysis we have again taken five size groups of employment and four groups for the growth rates of employment are concerned. While in the case of output a consistently negative relationship had been observed between the size of output and its rate of growth, in the case of employment growth, we do not get a very clear picture. Small sized units with employment of less than 10 workers initially, had a high average growth of employment, but the growth rate of employment does not decline with subsequent larger size groups of units.

Table 6.5: Growth Rate by Size of Employment

Employment Size Group		No. of units	Low growth 5% inclu- ding no growth units	Low growth 5% inclu- ding no growth units	Medium growth 5 - 10%	High growth 10 - 20%	Very high growth 20% +	Average growth	No growth
< 10		20	50.00	65.00	10.00	15.00	10.00	7.38	15.00
10 - 20		33	66.67	69.70	9.10	12.12	9.10	4.44	3.03
20 - 30		15	66.67	73.33	6.67	13.13	6.67	5.72	6.67
30 - 40		14	64.29	64.29	21.43	7.14	7.14	4.42	-
40 +		10	60.00	70.00	10.00	20.00	-	4.62	10.00
Total		92	61.96	63.48	10.87	13.04	7.61	4.69	6.52

A sizeable proportion of large sized units (employing 30 to 40 or more than 40 workers) experienced a medium or high growth in employment. That no consistent relationship between size and growth of employment of units existed is indicated by an insignificant, though, negative coefficient of correlation (-0.05122) between these two variables in the aggregate sample. The relationship is however found to be significantly negative in the case of machinery industry with a coefficient of -0.4934.

Table 6.6 : Correlation Coefficients

Industry Code	Industry Group	Correlation Coefficients	
		Output and growth rate	Employment & growth rate
31	Chemical and Chemical Products	-0.359125	-0.161878
33	Basic metal and alloys industries	-0.302652	0.237582
34	Metal products and parts	-0.220187	0.172109
35	Machinery & machinery tools	-0.472113	-0.493410
Total for all industry group		-0.143892	-0.051223

We have so far looked at growth of output as well as of employment and attempted to throw some light at the pattern of growth which emerges with respect to both output

as well as employment. We shall now look at the qualitative performance of the sampled units in terms of the use of the resources as reflected in the relationship between output, labour and capital.

6.6. Productivity

First we will examine the pattern of labour productivity in different industry groups and changes in them over 1971-79. Labour productivity has been measured both in terms of output per worker and value added per worker.

Labour productivity, measured as output per worker estimated to Rs.48861 for the aggregate sample, in 1971. It was higher than the all industry average in agro-based, chemicals and electrical machinery units. Very low productivity was observed in textiles and miscellaneous products, while in metal products and manufacture of machinery also it was lower than the all industry average. Paper products and basic metals groups had a figure approximating the average. The pattern continued to be the same in 1979, with labour productivity estimated at Rs.67124 except that the rubber industry which had lower than average labour productivity in 1971 had caught up with the all-industry average in 1979.

Table 6.7 : Industry-wise Output per Worker

(in Rs.)

Indu- stry Code	Industry Group	Average output per worker (1971)	Average output per worker (1979)
20	Agro-based, Food products	211866.79	115460.23
23	Textile and textile products	26288.85	36581.34
28	Paper and paper products	48293.77	60394.85
30	Rubber : rubber & plastic products	37019.01	61579.26
31	Chemical and chemical products	99632.41	110136.42
33	Basic metal and alloys industries	47581.45	72872.15
34	Metal products and parts	30662.99	48889.31
35	Machinery and machinery tools	35613.07	46594.72
36	Electric machinery	66257.21	86121.64
38	Miscellaneous	18014.16	15671.64
	Total	48860.84	67124.02

Labour productivity has registered an increase in
 / ly each industry group individual with the sole exception of
 the agro-based industries where there has been a sharp
 decline in labour productivity from Rs. 2.12 lakhs to 1.15
 lakhs; and in the miscellaneous manufacturing industry
 group where a marginal decrease is observed. In all the
 other industries there has been an increase in labour

productivity but basic metals, metal products and rubber products have had the fastest rise. Agro-based industries, however, continue to be the industry group with the highest labour productivity despite a sizeable decline in it, in 1979 over 1971. The chemical industry group comes a close second and is followed by electrical machinery group of industries.

The industrial activity in Ghaziabad seems highly material intensive as is indicated by a low value added to output ratio. Value added per worker at Rs.12389 was 25 per cent of the output per worker in 1971 and at Rs.15362, being even lower than that in 1979 (Tables 6.7 & 6.8). Agro-based, paper and chemical industries had higher value added per worker than all industry average in the year 1971, while in 1979, paper products have receded below and basic metals have stepped up above higher the average.

Figures of value added per worker indicate that the labour productivity has only marginally increased in 1979 over 1971 for all industry average whereas, it has registered a substantial decline in paper industry (from Rs.0.18 lakhs in 1971 to 0.08 lakhs in 1979). A decline in productivity have also been observed in chemical industries.

Table 6.8 : Value Added per Production worker

		(in Rs.)	
Indu- stry Code	Industry Group	Value added per produc- tion worker (1971)	Value added per produc- tion worker (1979)
20	Agro-based, food products	16377.88	20646.22
23	Textile and textile products	9580.58	9167.55
28	Paper and paper products	18331.04	7637.57
30	Rubber: rubber & plastic products	6792.85	8591.35
31	Chemical & chemical products	34522.69	33315.19
33	Basic metal & alloys industries	11036.66	19634.81
34	Metal products & parts	8949.69	11763.90
35	Machinery & machinery tools	10158.06	10145.91
36	Electric machinery	11060.37	13362.49
38	Miscellaneous	8124.98	5664.06
Total		12388.70	15362.43

and miscellaneous manufacturing industries. The textile industries and industries manufacturing machinery and machine tools maintained their levels of labour productivity. The chemical group of industries, however, continue to be group with the highest value added per worker despite a decline. A sharp increase has been observed in the case of basic metal industry group, where value added per worker increased from Rs.0.11 lakhs in 1971 to 0.20 lakhs in 1979.

6.7. Capital Intensity

Capital intensity of output measures inversely the efficiency of capital and capital intensity of employment, the role of capital in employment generation. Let us first look at the relation between output and capital, both fixed and total capital. In these terms, Ghaziabad's industrial structure seems quite efficient. A rupee of fixed capital, generated output worth Rs.3.31 in 1971 and Rs.4.50 in 1979. In the latter year, three industries, food products chemicals and electrical machinery units revealed a very high ratio (over 7:1) of output to fixed capital, while metal products on the other hand, was found to use a higher amount of fixed capital to produce a unit of output. Output to fixed capital ratio is found to have declined in food products, textiles, metal products and miscellaneous products group, while rubber products and chemicals have had a significant increase in output fixed capital ratio.

A rupee of total capital, generated output worth Rs.1.92 and Rs.2.18 in 1971 and 1979 respectively in Ghaziabad industries. In the year 1979, two industries, electrical machinery and agro-products units showed a high ratio (around 5:1) of output to total capital, while metal products and machinery and machine tools were found to use higher amount

Table 6.9 : Industry-wise Output/Fixed Capital

Indu- stry Code	Industry Group	Output/ fixed capital (1971)	Output/ fixed capital (1979)
20	Agro-based, food products	11.82	9.53
23	Textile and textile products	5.23	4.99
28	Paper and paper products	2.13	4.09
30	Rubber: rubber & plastic products	1.85	4.96
31	Chemical and chemical products	6.33	9.52
33	Basic metal and alloys industries	3.28	4.84
34	Metal products and parts	1.96	1.73
35	Machinery and machinery tools	2.61	3.55
36	Electric machinery	5.69	7.91
38	Miscellaneous	3.17	2.48
Total		3.31	4.50

of total capital to produce a unit of output. Output to total capital ratio is found to have marginally declined in textiles, chemicals, metal products, machinery and machine tools and miscellaneous products groups, but electrical machinery had had a significant increase in capital productivity in this sense. The marginal increases in ratios are also evident in industry groups, agro industries, paper, rubber and basic metal units.

Table 6.10 : Industry-wise Output/Total Capital

Indus- try Code	Industry Groups	Output/ total capital (1971)	Output/ total capital (1979)
20	Agro-based, food products	3.61	3.80
23	Textile and textile products	2.48	2.22
28	Paper and paper products	1.53	2.02
30	Rubber: rubber & plastic products	1.32	2.21
31	Chemical and chemical products	3.08	2.82
33	Basic metal and alloys industries	1.90	2.28
34	Metal products and parts	1.39	1.22
35	Machinery and machinery tools	1.57	1.38
36	Electrical machinery	2.42	5.31
38	Miscellaneous	1.83	1.53
Total		1.92	2.18

In terms of fixed capital per worker or capital labour ratio, it may be observed that agro-based, paper and rubber industry groups were high capital intensive in the year 1971. Only metal products has a higher than average capital intensity (Rs.14924) in 1979. Industries of chemical, basic metal and machinery and machinery tools have recorded almost similar capital intensity as in the case of all industry

average in 1971. The corresponding industries in 1979, having capital intensity around the all industry average are paper and basic metals. All other industry groups were less capital intensive at both points of time.

Table 6.11 : Industry-wise Fixed Capital/Employment

Indu- stry Code	Industry Group	Fixed capital/ employment (1971)	Fixed capital/ employment (1979)
20	Agro-based, food products	17929.48	12113.68
23	Textile and textile products	5025.08	7332.80
28	Paper and paper products	22715.46	14779.06
30	Rubber: rubber & plastic products	20003.60	12405.69
31	Chemical and chemical products	15742.64	11571.03
33	Basic metal & alloys industries	14518.29	15055.11
34	Metal products and parts	15615.83	28204.83
35	Machinery & machinery tools	13644.51	13141.97
36	Electrical machinery	11638.44	10888.90
38	Miscellaneous	5680.44	6306.19
Total		14746.20	14924.13

There is no change in the aggregate capital intensity of Ghaziabad industry over the period 1971-79. However, the capital intensity changed as compared to 1971 in individual industry groups with the exception of the basic

metal industries and miscellaneous group of industries, where the ratios remained unchanged. It declined in agro-based, paper, rubber, chemical, machinery and machine tools and/machinery. The only industry group registering substantial increase in capital intensity was metal product and had the highest capital intensity in the year 1979. The paper industry, where the capital intensity was highest in 1971, showed a sharp decline from Rs.22,715 to Rs.14,779.

Table 6.12 : Industry-wise Total Capital/Employment

(in Rs.)

Indu- stry Code	Industry Group	Total capital/ employment (1971)	Total capital/ employment (1979)
20	Agro-based, food products	58624.79	30389.28
23	Textile and textile products	10587.34	16478.14
28	Paper and paper products	31617.89	29877.77
30	Rubber: rubber & plastic products	28146.05	27800.51
31	Chemical & chemical products	32385.48	39105.14
33	Basic metal & alloys industries	26104.04	32024.83
34	Metal products and parts	22042.49	40057.56
35	Machinery & machinery tools	22673.44	33885.30
36	Electrical machinery	27362.77	16205.79
38	Miscellaneous	9829.83	10224.10
Total		25511.67	30792.04

As can be expected, capital intensity in terms of total capital-labour ratio, seems very high as compared to fixed capital labour ratios. For every worker Rs.25512 worth of investment had been made in 1971 and Rs.30792 in 1979. In the later year, metal products and chemical industries revealed a high capital investment per labour employed, while textiles and electrical machinery industries on the other hand were found to engage lesser amount of total capital to each labour employed. Total capital to labour ratio is found to have declined in agro, paper, and electrical machinery, while textile products, chemicals, basic metals, metal products, machinery and machine tools, and miscellaneous have shown an increase in total capital labour ratio. The increase in metal products industry is highly significant.

6.8. Conclusion

The overall growth performance of industrial units in Ghaziabad district revealed that agro and textile units have registered an overall high growth in terms of output, value added, fixed capital and employment, whereas engineering units have had a relatively lower growth rate. Looking at the size and growth relationship, a negative relationship

is evident in respect of output while in the case of employment no clear cut relationship emerges. In some employment size groups it is negative, while in others, a positive relationship is observed.

Labour productivity is found to be high in agro, chemical & electrical machinery groups. Over the period of time, the two industry groups, namely, metal products and rubber have shown high rate of increase in labour productivity. However, average capital intensity has not changed over the years. In some industry groups particularly in metal, capital intensity increased while in some, particularly in paper, a declining trend is observed.

Chapter VII

LOCATIONAL ADVANTAGES OF INDUSTRIES IN GHAZIABAD

No spatial location problem would exist if the resources were evenly distributed. But this is far from reality and economic resources are concentrated in certain areas. Consequently concentration of people and productive activities is observed in such resource regions. Moreover, industrial clustering is a common spatial phenomena and it takes place due to a variety of factors. Industries with forward and/or backward linkages with each other tend to opt for proximate locations in order to economise on transportation costs. Thus, inter-dependence is one of the important causes of industrial clustering. Besides industries may cluster around a common location to make use of common resource like infrastructure facilities, common raw-material or labour force. Transportation, market, power and many other economic and non-economic factors may work as an incentive in selection of site for location of industries.

The well known theories of location propounded by Weber, Hoover, and others, ascribe primary importance to transport costs in determining location, distinguishing between 'material' and 'market' orientation. In cases, where, there is a high weight loss in the processing of raw materials it is profitable to locate production near

the material concerned, and transport the product to markets, elsewhere. Conversely, in a 'market oriented' industry there is a high 'weight gain' in the production process, so that distribution costs per ton of final product are greater than the cost per ton of inputs coming from any single location to which it would pay the producer to move.

During the recent decades factories have been dispersed over large areas. Technological change which has been not only rapid but revolutionary in nature has facilitated remarkable diversification in manufacturing activities. Of late, factors, such as urban land values, location of specialised labour force, inter-firm relationship and so on seem to play more important roles than source of material and proximity to market, in the locational decision process of manufacturing firms.

It is not that only the economic factors influence location of factory. Motivations in choosing location may be different for different entrepreneurs. Individual preferences and social environment also play important role, at least in choosing among economically similarly placed locations. A combination of economic and non-economic factors thus goes into making a location attractive to entrepreneurs.

Choice of industrial location, like any other business decision, is normally a rational decision, which is made after an assessment of the relative advantages of different locations. In the production process, an industrialist has to perform three main tasks; first, the purchase of raw materials and the assembling of them at the point of production, second, the processing of these materials, and third, distribution of finished product to the market. Location will generally not affect, either the price, he has to pay for his raw materials from a given source or the price he gets for his finished product, but will obviously affect directly the transfer costs he has to meet inwards for his raw materials and outwards for his finished product. Hence, the location makes processing cost in one area different from that in another.

7.1. Determinants of Industrial Location

The factors that determine differences in cost of production, and thus profits, among locations and consequently the location of industries can broadly be classified into the following broad heads : (i) raw materials, (ii) infrastructure, (iii) proximity to market, (iv) industrial linkages and agglomeration, (v) labour,

(vi) any special incentives offered by the government.

In what follows we will discuss how these factors exert influence on the location of industries in a region and see whether, district Ghaziabad has some general or special location advantages in terms of these factors.

7.1.1. Availability of Raw Materials

The raw materials exert strong influence on the location of industries in a region. Weber¹ recognised the raw materials among the three basic requirements for industrial location, the other two factors being labour and transport. Miller² has listed raw materials among seven primary components of industrial location. In fact, raw materials enjoy pivotal position among various factors influencing the location of industries in a region.

All manufacturing industry perform some operation, upon a supply of materials, and therefore, all industrial establishments will be concerned with their location

¹Weber, Alfred, Translated by C.J. Friedrich, 1928, as Alfred Weber's Theory of Location of Industries.

²Miller, E.W., 1962, A Geography of Manufacturing, New Jersey : Prentice Hall, Inc., p.3.

relative to their materials and to the costs of procuring them. Most of the raw material resources are not available to industry at equal cost irrespective of their location because the costs of exploitation and distribution vary, widely. Even the government owned agencies can not distribute raw materials on the fixed prices in different locations. This is due to the differences in transport cost. If we examine the extent to which the material has power to attract industry to itself, we will find it vary, according to the material in question and the process using it. If the raw material loses greatly in weight in manufacturing process, it will cause the industry to be attracted to the point of material production. In this way transport costs on useless waste matter are avoided. The manufacture of sugar, pulp and paper, butter, cheese and manufactured milk products are an excellent example of the weight loosing raw material industry. Such industries are thus, often found to be located in close proximity to their main raw materials. The fruit and vegetable canning and preservation are often found near the sources of supply due to perishable nature of the material.

The influence of the raw material on location of industry will also depend on the number of materials

involved and their relative importance. "The attraction of one material in one direction may be countered by the pull of another in a different direction, and in general, as the number of materials used increases, the influence of any one will decline, unless, it is one that loses much weight. For example, the iron and steel industry, again, uses several important raw materials, and locations based on access to coal or to ore or to scrap can be found. Many modern industry, of which the radio and electrical product industries are good examples, use numerous materials. None of these materials is significantly weight losing or perishable, and most of them are required in relatively small quantities. In such industries materials exert little, if any, influence on the location decision".³ The costs or difficulty of movement that restrict the free flow of material, play a great role in location decisions. But now in advanced communities, the influence of materials vary according to the technological conditions of distribution and utilisation. With the advances in transport techniques and equally significant technical advances in processing, have decreased the importance of raw materials on a broad range of industries.

³ Estall, R.C. and Buchanan, R.O., Industrial Activity and Economic Geography, Hutchinson & Co. Ltd., London, p.24, para 2.

For such reasons, now-a-days, industry is less seriously affected by the location of its materials. Remoteness from markets, lack of skilled labour, poor transport facilities and other important infrastructural facilities, may off-set the pull of the raw materials. However, it is clear that material procurement costs do remain significant as a locating factor in some industrial processes.

The major resources for industrial exploitation in the Ghaziabad district are agriculture and livestock. No forest or mineral resources are available in the district in any significant measure for industrial exploitation. Resource-based industries of the district are, therefore sugar mills, distilleries chemicals, cold storages, cotton spinning mills, mini paper plants, wheat flour mills, dairying, and tanneries. Majority of industrial units in Ghaziabad, however, fall into the foot-loose category, and not greatly influenced by the local availability of raw material.

Although most of the raw materials being used by the various industries is not of local origin, yet, the industrial structure of Ghaziabad has both prospered and diversified at a fair pace by virtue of the fact that

there is ready availability of these inputs either within the district itself or at Delhi, which is quite close to Ghaziabad. Various government agencies, for instance, supply material at almost uniform prices to buyers all over the country and thereby eliminating the advantage that a resource based industry would have had as a result of being located at the resource head. For example, the Steel Authority of India, a government undertaking, supplies iron and steel of various quality and specifications to the industries at different locations at the same price. Similarly, the Uttar Pradesh State Industry Corporation (UPSIC), caters to the needs of small industries in terms of raw material and makes it available to these units, registered with them. Some times, however, shortage of raw materials in the concerned depots creates serious problems regarding timely supply. The easy procurement of raw material from Delhi market, mitigates the disadvantage of little local resources for Ghaziabad as a location.

7.1.2. Infrastructure

Industrialisation of any area today depends probably to the largest extent upon the infrastructure facilities. Infrastructure facilities in industry imply availability

of power, network of roads and railways, communications, developed plots, and banking facilities.

(a) Transport : The importance of transport in industrial location can hardly be over emphasised. For time and cost involved in the transportation of raw materials from source to industrial location and final product from factory to market is a crucial factor which influences location of the units in an area.

The significance of transport as a factor for location is evident in the industrial units of Ghaziabad since a high proportion of sample units are buying raw materials from either Delhi or other places outside Ghaziabad. As many as 47 per cent of the sample units depend for their raw material on Delhi. Of these nearly 22 per cent are totally dependent on Delhi as their market for raw materials and another 6 per cent rely on places besides Delhi. Similarly, for the sale of finished products, Delhi is a market for nearly 65 per cent units in varying degrees of importance. Places outside Delhi, also serve as market for the products of Ghaziabad, which is evident from the fact that over 60 per cent of these units are marketing part of their products outside

Ghaziabad and Delhi. Such a high degree of trade between Ghaziabad and the other places is made possible as a result of the very efficient rail and road network that connects this industrial town to other places of the country.

The district is well connected with Calcutta in east, Bombay and Madras through Delhi in South, Punjab on West side and Saharanpur, Muzaffarnagar, Dehradun on the northern side by metalled roads as well as by railways.

(b) Availability of Power : Past experience of India and that of other countries proved that power makes a decisive contribution in industrial development. In these days of intensive mechanisation power, in fact, is the most important determinant governing the pace of industrial development. Its qualitative superiority manifest chiefly through its greater flexibility and divisibility, and thus electricity has made it possible to introduce for reaching innovations in fact, to create whole industries unthinkable without it.⁴

⁴ Zimmerman, E.W., World Resources and Industries, Harper, New York, 1951, p.17.

In Uttar Pradesh, lack of adequate and assured power supply is often singled out as the main factor for, the industrial lag of the State. But Ghaziabad had a relatively good power position, during the late sixties and early seventies, attracting location of a large number of units. The position has subsequently become somewhat difficult. The somewhat constrained position of power supply in the Ghaziabad, has not affected location advantage of the district very much, as this location is still somewhat better off as compared to other parts of the State. Further, the assurance from the government to establish an atomic power station in adjacent Bulandshahr district (Narora Atomic Power Station), will prove to be a major factor in attracting industries and expansion of the existing ones in the district.

(c) Industrial Estates and Industrial Complexes : One of the basic requirement of a new industry is the availability of suitable land for the erection of plants and building and the availability at site of facilities like, roads, power, water, drainage, railway-siding, watch and ward etc. A considerable amount of time and efforts are required in making necessary arrangements

for these essential facilities and consequently any delay on the part of entrepreneur in making arrangements for them, result in a set back in the establishment of the industry.

Ghaziabad district provides well developed industrial areas in which mostly all kinds of facilities are available. These areas are in a large number and well connected with the main roads. Apart from the 9 industrial areas/estates developed by the State Government Corporation, (UPSIDC), few private industrial areas are also providing infrastructure facilities on the similar lines. Easy availability of land, constructed sheds, developed road and rail links, water supply and other important facilities proved boon for the district and largely influenced the local and outside entrepreneurs to establish their manufacturing unit in Ghaziabad. The location of various units in close vicinity of each other in industrial areas added further attraction for Ghaziabad location.

(d) Banks and Financial Institutions : The presence of highly developed credit system in Ghaziabad district, provided by banks, cooperative institutions and various other financial institutions engaged in the promotion of

industrial development, has helped establishment and growth of industrial units. Ghaziabad is one of the district where comparatively a better network of bank offices exist. By 1979, there was 139 bank branches of 29 nationalised banks, and urban cooperative banks, in the district. In the year 1981, number of bank branches per lakh of population was 8.3 as compared to 4.74 in Western Uttar Pradesh and 4.49 of State as a whole. Credit deposit ratio in the Ghaziabad district was also very high with 79.15 (45.84 for Western Region of U.P. and 43.89 for the State) in the year 1981.

Keeping in mind the growing need of capital resources in the district, State as well as central government have come forward with various schemes of incentives, those are operated through numerous institutions like the Uttar Pradesh Financial Corporation, Pradeshik Investment Corporation of Uttar Pradesh and Industrial Development Bank of India.

7.1.3. Market

Despite the declining influence of raw materials on location decision in most modern industry, it remains true that all entrepreneurs will be concerned with regard to their essential material supplies. The attractions of a market location have become important for many

industries not only from the point of view of availability of raw materials but also for the marketing of the finished products.

Ghaziabad itself has a reasonably well developed market, which can be seen from the fact that 70 per cent of the sampled units depend partly or wholly on it for the procurement of their raw material. Similarly 73 per cent units rely upon the local market for the disposal of its products. Here again the degree of reliance varies, but 22 per cent units sell over 75 per cent of their products in the local market. Agricultural base of the district gives a larger market to the agricultural implements, diesel engines, etc. within the district. The textile industries also find big local market to sell their final product.

The proximity to Delhi, which is the most developed market of the northern region is another factor which has had a significant impact on the location of industries in Ghaziabad. Being only 20 kms away and well linked as well, the entrepreneurs find Delhi a convenient market for purchasing raw materials, intermediate products as well as for sale of their finished products. As many as

22 per cent of our sample units were almost exclusively purchasing their raw material from Delhi and a similar percentage relied on Delhi for their raw material to some extent at least. Similarly, 13 per cent units are selling about 75 per cent of their products in Delhi alone, while, in all, 65 per cent units are depending on the Delhi market for their sales to a smaller or larger extent.

7.1.4. Human Resources

Human resources, particularly efficient and skilled labour, play a crucial role in the manufacturing processes, but its importance varies from industry to industry. In some industries, the final product contains a large element of labour cost in its total cost, and in such industries geographical differences in labour cost may remain predominant in location. Furthermore, the availability of skill that too on a short notice also influence location of industrial units.

The unskilled labour is readily available in Ghaziabad, as in most other areas of the country. But in Ghaziabad, the availability, skilled and semi-skilled workers seem an important factor influencing the location. In our sample units, more than 50 per cent of the labour force

is constituted by skilled and semi-skilled labourers. Of these over three-fourths are local workers. The textile units of Ghaziabad have hundred per cent local workers employed in them conforming to all levels of skill.

Further, due to speedy industrialisation of the district, the role of skilled and semi-skilled labourers have increased. Although, there are two formal technical training institutes for the workforce, however, learning by doing made a large number of them semi-skilled and skilled workers. The two technical institutes in the district have about 240 seats and produce a large number of trained technical hands for industries.

7.1.5. Government Policy and Incentives

Apart from the various personal and economic factors, government policy also influences the final choice between alternative locations. Government policy and planning may influence a location by providing better facilities in terms of special incentives for an area, uninterrupted power supply, etc. Further, differential taxation policy is another important instrument by which it can influence a particular location. Influence on industrial location may also be produced through control of land use in certain areas.

Government policy and planning made Ghaziabad district highly attractive for industrial location. To attract industries in the district, the State and Central governments have offered various incentives. Availability of cheap land, constructed sheds, finance at favoured terms, raw material quota, facilities of Industrial Estates and complexes and tax exemption for initial two-three years is the part of government policy and planning which made Ghaziabad district one of the best suited locations for industrial activities in northern India. Indirectly, the comprehensive control of land use for industrial expansion and setting up of new units in Delhi, further, influenced the Ghaziabad location. The district being near Delhi was found to be the most suitable site by Delhi entrepreneurs to start new units or for those, who wanted to diversify their existing product lines.

7.2. Factors in Location : Entrepreneurs' Perception

We have looked into some of the important factors, those exerting influence on the location of industries in the district. Now we will make an attempt to assess how the individual entrepreneurs perceive the importance of various factors considered to be relevant for deciding the

location of their units in Ghaziabad district. This assessment is undertaken on the basis of responses collected from the entrepreneurs of 109 sample factories.

There are a number of economic and social factors that an entrepreneur consider to assess the potential performance of a location. Some times in location decision, non-economic factors play an important role, which to a certain extent, may be considered by entrepreneurs as compensating for the unfavourable economic situation or adding to the favourable economic situation. In most of the sample units, the entrepreneurs mention more than one factor as motivating them to locate their factories. In all we, therefore, have as many as 293 responses from 109 entrepreneurs of the sample factories of Ghaziabad district.

If we accept the frequency by which a factor is mentioned as a measure of its importance, infrastructure facilities and personal reasons emerge as most influential location factors. Preference for infrastructure is found to has weighed with 72 per cent entrepreneurs in deciding the location of their factories. The personal preference due to Ghaziabad being the native place, providing good social and educational amenities and conditions of living, emerges as the second most important influence. Both these factors are significant in all the product groups in the

Table 7.1 : Factors in locational Advantage

(Frequency distribution)

Locational Factors	20	23	28	30	31	33	34	35	36	38	Total
Infrastructure Facility	4	4	5	3	10	15	11	15	4	5	78 (71.56)
Personal Reasons	2	3	2	3	4	14	10	15	5	6	64 (58.72)
Industrial Linkages and Agglomeration	-	4	3	5	3	13	6	6	1	1	42 (38.52)
Labour Factor	2	3	1	5	3	6	6	9	3	2	40 (36.70)
Availability of Raw Material and Inter Market Inputs	2	1	2	2	1	6	7	6	-	2	29 (26.60)
Market Factor	1	2	1	1	4	2	4	6	2	3	26 (23.85)
Cheap Finance, Incentives etc.	1	1	1	-	1	2	2	4	-	2	14 (12.84)
Industry-wise Total Units	4	6	6	6	13	21	15	26	6	6	109

district. The next most frequently mentioned factor is the industrial linkages and agglomeration : around one-fifths of entrepreneurs considered it as influencing location.

Availability of labour both skilled and semi-skilled have featured as another important group of factors followed by availability of raw material, market and facilities for finance. Finance on favoured terms influenced location decision, but in a very small number of cases.

Different factors seem to have varying relative influence on location, of units in different industries, while some of the factors like infrastructure are stated as important by most entrepreneurs in all the industries some other factors find mention as a factor by a significant proportion (at least 30 per cent), in a smaller number of industries. Industries in which a factor has been mentioned at least one-third of the entrepreneurs are listed below :

1. Infrastructure Facilities :
 1. Agro-based, food products
 2. Textile industry
 3. Paper products
 4. Rubber product
 5. Chemical & chemical products
 6. Basic metal and alloys industries
 7. Metal products and parts
 8. Machinery and machine tools
 9. Electrical machinery

- | | | |
|---|---|--|
| 2. Personal Reasons | : | 1. Agro-based, food products
2. Textile industry
3. Paper products
4. Rubber products
5. Basic metal & alloys industries
6. Metal products & parts
7. Machinery & machinery tools
8. Electrical machinery |
| 3. Industrial Linkages and Agglomerations | : | 1. Textile industry
2. Paper products
3. Rubber products
4. Basic metal and alloys industries
5. Metal products & parts |
| 4. Labour Factor | : | 1. Agro-based, food products
2. Textile industry
3. Rubber products
4. Metal products & parts
5. Machinery and machinery tools
6. Electrical machinery |
| 5. Availability of Raw material & Inter-market Inputs | : | 1. Agro-based, food products
2. Paper products
3. Rubber products
4. Metal products & parts |
| 6. Market Factor | : | 1. Textile industry
2. Electrical machinery |
| 7. Cheap Finance | | Nil |

7.3. Comparative Advantage and Location

The economic factors that are considered for assessing the advantage and disadvantages of a location for setting up facilities can be measured in terms of costs and revenue

of the industry. In precise terms, the locational advantage can be compared in terms of cost to output ratio (COR), measured as cost per rupee value of the output. Inverse of this ratio can be taken to measure the surplus per rupee of output value, which, it is presumed is what an entrepreneur aims at maximising. The COR's are measured for each major industry group in Ghaziabad for the years 1971 and 1979, and the locational advantage of the district is assessed by their comparison with the COR's for Uttar Pradesh as a whole. Further, these ratios also give an idea of relative locational advantage of different industries within the district.

7.3.1. Cost Output Ratios (COR's) for the Ghaziabad Industries

The COR's of various industry groups in Ghaziabad district based on the data from the selected factories are presented in Table 7.2.

The average cost output ratio of all industries together was found to be 0.82 in Ghaziabad district, in the year 1971. The figure for the year 1979 is 0.85. It is evident that the situation in the year 1971 was more favourable as compared to 1979 in terms of cost-output ratios.

Table 7.2 : Cost Output Ratios

Industry Code	Industry Group	Uttar Pradesh (1971)	Ghaziabad (1971)	Ghaziabad (1979)
20	Agro-based, food products	0.76	0.75	0.86
23	Textile & textile products	NA	0.84	0.85
28	Paper and paper products	0.86	0.72	0.90
30	Rubber: rubber & plastic products	0.81	0.84	0.89
31	Chemicals & chemical products	0.82	0.73	0.80
33	Basic metal & alloys industries	0.82	0.81	0.82
34	Metal products & parts	0.84	0.83	0.85
35	Machinery and machine tools	0.82	0.94	0.89
36	Electrical machinery	NA	0.91	0.91
38	Miscellaneous	NA	0.72	0.82
Total		0.82	0.82	0.85

Source for U.P. : Obtained in the study, 'Spatial Diversification of Industries', (A study in Uttar Pradesh) by Dr. T.S. Papola, Table V:1, p.89.

NA : Not available in the source.

In 1971, Ghaziabad district revealed similar aggregate locational feature as the State as a whole, as indicated by the same cost-to-output ratio (0.82) in the two cases. However, the district offered a relative locational

advantages in most industries. Only in the case of rubber and rubber products and machinery and machine tools industries, the COR was found to be higher in the district than obtained in the State as a whole. The difference was very striking for machinery and machine tools which had a COR of 0.94 for Ghaziabad as against the State average of 0.82. In 1979, the COR of this industry group had declined to 0.89 which indicates that the efficiency by the industry has improved. In other industries the district enjoyed a locational advantage. This advantage is maximum in the case of paper and paper products with a COR of 0.72 (State 0.86) and chemical and chemical products, which has a COR of 0.73 (State 0.82).

Inter-industry comparisons of COR's of various industry groups in the district for the year 1971, indicate that agro industries, paper, and chemical group of industries show a relatively better advantage while machinery and machine tools and electrical machinery show relatively low advantage in Ghaziabad location. The industry groups of average advantage are : basic metal and alloys industries, manufacture of metal products and parts, textile products, and rubber product industries.

In the year 1979, the most advantageous industry group with a COR of 0.80, as compared to all industry

average (COR 0.85), is chemical and chemical products, whereas, the smallest advantage is seen in electrical machinery (COR 0.91). The variations among industries in terms of their locational advantage or disadvantage are marginal in 1979, whereas they were quite wide in 1971. COR of different industries varied between 0.72 and 0.94 in 1971; in 1979 variations were between 0.80 to 0.91 only. It seems that development of general services and agglomeration effects bring about a similar cost-output situation among industries of different kind.

In general, therefore, one can observe that Ghaziabad had locational advantage over other locations in the state in almost all the industry groups in the year 1971. Paper industry was found to be the most advantageous in district as its COR is low when compared with average COR for the district, closely followed by chemical and agro industry groups. By the year 1979, the district had lost the gained location advantage and at the same time profitability of the industrial units have also declined in average and in industry groups individually. However, machinery and machine tools units have improved its position in terms of profitability.

7.3.2. Cost Components and COR

It is true that cost involved in the production process make a location advantageous or disadvantageous. It is important from this viewpoint to examine which items of cost are relatively more important in different industry groups, and are therefore, relatively making location of an industry more or less advantageous. For this purpose, we have data on raw material and labour input for different industry groups of Ghaziabad district, in terms of the cost of these inputs as a proportion of the value of output. Price per unit of input could probably be a more direct indicator for assessing comparative advantage in terms of each input, but such information could not be reliably collected for raw material cost.

Raw material makes the major component of value of product in almost all industries. In Ghaziabad, in the year 1971, it seems that in general, the raw material costs and output ratio (MOR) was marginally higher as compared to State. The average MOR for the district was 0.68, the corresponding figure for the State is 0.67.

Looking at the industry-wise MOR's for both, district and State, the industry groups; paper, rubber, metal products and parts emerge as the ones with locational

Table 7.3 : Raw Material Cost-output Ratios

Industry Code	Industry Group	Uttar Pradesh (1971)	Ghazia-bad (1971)	Ghazia-bad (1979)
20	Agro-based, food products	0.63	0.71	0.67
23	Textiles & textile products	NA	0.57	0.73
28	Paper and paper products	0.64	0.56	0.77
30	Rubber: rubber & plastic products	0.71	0.68	0.74
31	Chemicals & chemical products	0.48	0.68	0.68
33	Basic metal & alloys industries	0.66	0.67	0.68
34	Metal products & parts	0.65	0.56	0.63
35	Machinery & machinery tools	0.65	0.75	0.67
36	Electrical machinery	NA	0.79	0.80
38	Miscellaneous	NA	0.51	0.58
Total		0.67	0.68	0.69

Source for U.P. : 'Spatial Diversification of Industries',
 (A study in Uttar Pradesh), Table V:3,
 p.102.

advantage in the district in terms of raw material cost of output, while the agro, chemicals and machinery and machine tools industries lack such advantage. Basic metal and alloys industry, however, offers no clear advantage or disadvantage in terms of raw material cost in the district over the State.

In the year 1971, in the Ghaziabad district, there is found to be a significant variations in the material to output ratio among different industry. The industry groups, paper, textile, metal products and parts and miscellaneous group of manufacturing industries, have a relative advantage over other industries in terms of the material cost in relation to the value of output.

Over the period of time, i.e., from 1971 to year 1979, the average MOR in Ghaziabad district increased marginally, but in the industry groups; agro and machinery and machine tools, the factories have improved in terms of cost of raw material in relation to value of output. In all other industries, except in basic metal and alloys and electrical machinery, where the ratios remained unchanged, material cost has increase as proportion of value of output.

Wage cost is found to be rather a small part of the value of output in aggregate industrial structure in Ghaziabad (Table 7.4). It was 7 per cent in 1971 and has further declined to 6 per cent in 1979. Wage cost to output ratio (WOR), for Uttar Pradesh is also found to be similar (0.07) in 1971.

Table 7.4 : Wages/Salaries Output Ratios

Industry Code	Industry Group	Uttar Pradesh (1971)	Ghaziabad (1971)	Ghaziabad (1979)
20	Agro-based, food products	0.07	0.02	0.04
23	Textiles and textile products	NA	0.18	0.09
28	Paper and Paper products	0.12	0.09	0.04
30	Rubber: rubber & plastic products	0.05	0.06	0.04
31	Chemicals & chemical products	0.15	0.04	0.04
33	Basic metal & alloys industries	0.09	0.08	0.05
34	Metal products and parts	0.10	0.10	0.08
35	Machinery and machinery tools	0.13	0.08	0.08
36	Electrical machinery	NA	0.06	0.05
38	Miscellaneous	NA	0.15	0.17
Total		0.07	0.07	0.06

Source : 'Spatial Diversification of Industries', (A study in Uttar Pradesh), Table V:4, p.104. (for U.P. only)

But, Ghaziabad is found to have a relative advantage over the State as a whole in terms of labour cost of output in almost all product groups, except rubber and rubber products. The largest difference is found in the industry group chemical and chemical products, for which WOR for district is 0.04 as compared to 0.15 of the State.

The next industry group with such advantage in the district is of agro industries where WOR in the district was 0.02 as compared to 0.07 of the State.

Looking at the inter-industry differences in WOR for the year 1971, the factories of industry groups, agro industries (0.02) and chemicals (0.04) have low WOR as compared to the average WOR for that year in the district whereas industry groups, textiles and miscellaneous manufacturing industries, have high wage to output ratios as against the all industry average.

In most the industry groups, in the year 1979, WOR has declined and spending less of their output value on wages, as compared to 1971 in the Ghaziabad district. In textile industry, where WOR was highest in the year 1971 (0.18), though remain second highest in the year 1979, has declined to half. The other product groups, in which this declining trend is visible are; paper industry, rubber industry, basic metal and alloys, metal products and parts. The only industry group with unchanged WOR is chemical and chemical products (0.04 for the both years).

It is clear from the above analysis that out of the total cost incurred to produce one unit of output, raw material cost constitute the major part. On an average

in the year 1971, Ghaziabad industries spending 82 paise to produce one rupee worth of output. Out of the total cost, 68 paise (83 per cent) were spent on raw material and on an average 7 paise (8 per cent) on wages and salaries. The remaining 7 paise of the cost, incurred on various heads of the production process. Almost similar picture is emerging for the industries in the State as a whole. However, in the year 1979, the district has shown comparative disadvantage, as the expenditure of raw material increased substantially.

7.4. Conclusion

To conclude, Ghaziabad district has locational advantage over the other industrial areas of the State although most industries in the district are not resource based. It is the easy availability of raw materials from various sources, good transport connections, better infrastructural facilities, cheap and abundant, skilled, semi-skilled and unskilled labour force and institutional finance which influenced the local and outside entrepreneurs to establish their factories in the district. The ready market for industrial produce, locally and outside the district and particularly that of the Delhi, emerged

as one of the important factor for Ghaziabad location. Furthermore, the cost of raw materials, and particularly or labour inputs in the production process were found to be low than the cost of these inputs in the State, which gave clear advantage to Ghaziabad location.

Chapter VIII

IMPACT OF INDUSTRIAL DEVELOPMENT ON REGIONAL
ECONOMY

Industrialisation contributes to the economy of a region by raising national income, creating employment opportunities, expanding market for trade and commerce, raising capital formation and by increasing technological complementaries. Industrialisation also helps in changing socio-economic set-up of an economy by developing enterprising class and skill levels of work-force. The diffusion of the effects of industrial development over the whole economy results in an overall increase in rate of growth,¹ through 'spread effects'.² Industrialisation helps in diverting an increasing proportion of workers from the low productivity primary occupations to high productivity secondary occupations, particularly, manufacturing activities; by creating backward and forward linkages for expansion of other sectors, and also inducing improvement in productivity in these sectors through technological change.

The impact of industrial development on the economy of a particular region, however, depends on the initial

¹ Maizels, A., Industrial Growth and World Trade, Cambridge University Press, 1963.

² Myrdal, G., Economic Theory and Under-developed Regions, New York, 1957.

level of incomes in the society, the density of population and the types of industries being established. The impact will be higher, if the structure of the economy of a region is responsive to the process of industrial growth in terms of the favourable situation regarding these factors.

In this chapter, therefore, attention has been focussed on how the level of industrialisation in the district has influenced the regional economy on the whole. In the first instance, we look at the economic structure of the district in terms of contribution of different sectors for income and employment, and the impact that a higher proportion of industrial sector has produced on the income levels. Here, since the data for a longer period are not available for the district, we have adopted a comparative framework, using the district, Western Region of Uttar Pradesh, and the entire State of Uttar Pradesh, as units for comparison. Next, an attempt has been made to study the effect of industrial development through linkages. Here, we have specifically investigated into the questions of procurement of raw materials from within the district or outside it, and sale of the products in different areas. Third, we examine as to how far industrialisation of Ghaziabad

has helped in the development of local entrepreneurs, and in opening up of job opportunities for various categories of workers.

8.1. Effects on the Level of Income

Industrialisation brings changes in the level of income with the help of improved methods of production. The change in technology, generally increases productivity of capital and labour force,³ which results in an increase in the amount of national as well as per capita income. In turn, it influences the capacity and inducement for capital formation and investment.

The estimates of national income are available at the national and State level only. At the district level, we have available, estimates of net output from the commodity producing sector, which we have used as a proxy to the income. The economic and statistics division, State Planning Institute, Uttar Pradesh published the estimates of net district domestic product of five commodity producing sectors at the district

³Dutta, B., The Economics of Industrialisation, The World Press Ltd., Calcutta, 1952.

Table 8.1 : Sector-wise Net Output from Commodity Producing Sectors

Sectors	Ghaziabad 1976-77	Western region 1976-77	Uttar Pradesh 1976-77	Ghaziabad 1977-78	Western region 1977-78	Uttar Pradesh 1977-78	Ghaziabad 1978-79	Western Region 1978-79	Uttar Pradesh 1978-79
A. Primary	45.15 (50.45)	1120.11 (83.46)	2722.64 (85.68)	48.25 (49.78)	1211.27 (82.61)	2960.84 (84.98)	44.49 (41.91)	1207.38 (80.96)	2991.77 (83.58)
B. Secondary	44.34 (49.55)	222.00 (16.54)	455.07 (14.32)	48.68 (50.22)	255.01 (17.39)	523.36 (15.02)	61.67 (58.09)	283.92 (19.04)	587.96 (16.42)
Total output	89.49	1342.11	3177.71	96.93	1466.28	3484.20	106.16	1491.30	3579.73
Per capita output (Rs.)	560.71	380.36	319.47	588.52	405.87	350.67	624.10	402.89	343.19

Source : District Domestic Net Output (Commodity Producing Sector) :
 Economic and Statistics Division, State Planning Institute,
 Uttar Pradesh.

level. These five commodity producing sectors are :

1. Agriculture and Animal Husbandry
2. Forestry and Logging
3. Fishing
4. Mining and Quarrying
5. Manufacturing (Registered)
6. Manufacturing (Unregistered)

Further, to took into the shares of two major sectors of the economy, the first four commodity producing sectors are clubbed together as a primary sector and manufacturing, both registered and unregistered as secondary sector. Ghaziabad being a newly formed district, estimates are available only for the three years, from 1976 to 1979. We have, therefore, used here data for these three years for the district, Western Region and the State at constant prices as presented in Table 8.1.

As noted earlier, we do not have data for long enough period to draw definitive conclusions on temporal basis, on industrialisation, and economic structure and levels of income of Ghaziabad. Even the three-year data, however, suggest a swift change in proportions, secondary sector having increased its contribution from 50 to 58 per cent, correspondingly the aggregate commodity

output has grown by about 22 per cent and per capita income by 11 per cent during a three year period. During the same period, the secondary sector's contribution has risen from 17 to 19 per cent in Western Region and from 14 to 16 per cent in Uttar Pradesh. Commodity output in these two cases has increased by 11 and 12 per cent; and per capita income by 6 and 7 per cent respectively. This limited evidence clearly bring out the fact that faster industrial development in Ghaziabad has led to a substantially higher increase in output and per capita income in the district as compared to the Western Region and the State.

The relationship is more reliably brought out by cross-section comparison among the three geographical units at given points of time. In any of the year, the per capita income level is highest in Ghaziabad followed by western region and Uttar Pradesh; that is also the order of the three, in terms of the share of the secondary sector. A significantly high share of secondary sector, has in fact led to a significantly high income level in Ghaziabad as compared to Western region and Uttar Pradesh.

As pointed out earlier, industrialisation leads to higher income levels directly by engaging a larger proportion of workers in the higher productivity secondary

Table 8.2 : Percentages of Main Workforce in Various Categories to Total Workers

	Cultivators	Agricultural Labour	Workers in household industries	Other workers				Percentage of main workers in total population
				1971	1981	1971	1981	
Ghaziabad	39.22	32.94	12.61	12.78	6.46	4.40	42.71	49.88
Uttar Pradesh	57.43	58.02	19.95	16.32	3.66	4.39	18.96	21.27
								30.94
								29.13
								27.51

Source : Provisional Census, Uttar Pradesh, 1981.

sector than in the low productivity primary sector and also by raising the overall levels of productivity.

8.2. Shift of Work-force

As can be seen from the figures in Table 8.2 Ghaziabad district had only 46 per cent of its workers in agriculture, as against 74 per cent in the State as a whole, and with only 1.59 per cent of the total main workers of the State Ghaziabad produces 3 per cent of the total commodity output of the State. Further, over the decade 1971-81, a faster growth in output in Ghaziabad than in Uttar Pradesh, as noted earlier, is also accompanied by a larger shift of labour-force from agriculture to other sectors in Ghaziabad than in Uttar Pradesh. In the State, there has been a small fall in the share of workers in agriculture from 77 to 74 per cent, while in Ghaziabad, the corresponding decline has been from 51 per cent to 46 per cent.

8.3. Impact of Local Entrepreneurial Development

While surveying 109 sample factories of various industry groups in Ghaziabad district, we found in all 51 per cent entrepreneurs are natives of Ghaziabad

Table 8.3 : Industry-wise Distribution of Units by Domicile Status
of Entrepreneurs

Indu- stry Code	Industry Group	Local		Non- Local		Non- Local		Total 3+4
		Delhi	Within the State	Outside the State	Total	Total		
1	2	3	4	5	6	7	8	
20	Agro-based, food products	2	2	2	-	-	-	4
23	Textiles and textile products	5	1	1	-	-	-	6
28	Paper and paper products	-	6	2	2	2	2	6
30	Rubber, rubber & plastic products	3	3	1	2	-	-	6
31	Chemicals and chemical products	4	9	3	2	4	4	13
33	Basic metal and alloys industries	10	11	1	3	7	7	21
34	Metal products and parts	8	7	4	2	1	1	15
35	Machinery and machinery tools	15	11	-	2	9	9	26
36	Electrical machine	5	1	-	1	-	-	6
38	Miscellaneous	4	2	2	-	-	-	6
	Total	56	53	16	14	23	109	

district and most of them are from business and trading class families. In industry groups; textiles and electrical machinery, local entrepreneurs accounted for three-fourths of the total sample entrepreneurs; whereas in paper and chemicals, non-local entrepreneurs have a higher proportion. It is interesting to note that industry group paper and paper products have not a single local entrepreneur in our sample. In the remaining industry groups the distribution is almost even among local and non-local entrepreneurs.

Of the 56 promoters belonging to Ghaziabad district, around 50 per cent were found to be first generation entrepreneurs. The average age of local entrepreneurs is 40 years, while average for the entire sample is around 50 years. This information could not be deemed to indicate any definite trend, except, perhaps that, people from Ghaziabad are coming up as entrepreneurs and they are younger as compared to the non-local entrepreneurs in the district.

The local entrepreneurs are mostly well educated with 61 per cent of them being graduates or with even higher qualifications. Only one entrepreneur was found to be illiterate, in the sample. Of these as many as 20

per cent are engineers. The scheme of special incentives to engineering graduates thus seems getting a good response in the district. They are found concentrated in the engineering industries and in rubber and chemical products.

Thus, according to the number of units set up in the district, local entrepreneurs have claimed a major share of promotional activity. However, credit for setting up some of the larger size units goes to non-local entrepreneurs.

8.4. Generation of Employment

Looking into the effect of industrial development in terms of employment generation we find that the production workers engaged in manufacturing activities have had a sizeable increase of around 37 per cent between 1971 and 1979. Major part of this increase has gone to the local workforce. In case of food products and textiles, the increase in employment was over hundred per cent while in the case of industry groups, paper and paper products, rubber and miscellaneous manufacturing industries it was over 75 per cent. Only industry group electrical machinery and parts showed a very small drop in the absolute number of production workers at the two points of time.

Table 8.4 : SKILL composition

Industry Code	Industry Group	Skill composition				Total production workers	
		1971	1979	Semi-skilled workers	Un-skilled workers	1971	1979
20	Agro-based, food products	8 (33.33)	14 (22.22)	7 (29.00)	12 (19.05)	9 (37.50)	37 (58.73)
23	Textiles and textile products	20 (35.00)	40 (33.61)	33 (57.89)	53 (44.53)	4 (7.00)	26 (21.84)
28	Paper & paper products	28 (26.92)	43 (23.11)	23 (22.11)	15 (27.41)	53 (50.96)	92 (49.46)
30	Rubber, rubber & plastic products	56 (36.36)	75 (27.77)	25 (16.23)	40 (14.81)	73 (47.40)	155 (57.40)
31	Chemicals and chemical products	31 (21.37)	53 (27.19)	35 (24.13)	61 (31.28)	79 (54.48)	81 (41.53)
33	Basic metal and alloys industries	177 (30.83)	214 (27.72)	134 (23.34)	165 (21.37)	263 (45.82)	393 (50.91)
34	Metal products and parts	87 (29.81)	90 (24.52)	76 (25.15)	92 (25.06)	139 (46.00)	185 (50.40)
35	Machinery & machinery tools	84 (29.89)	76 (24.43)	48 (17.08)	63 (20.25)	149 (52.66)	172 (55.30)
36	Electrical machinery	36 (20.57)	19 (10.98)	64 (36.57)	70 (40.46)	75 (42.85)	84 (48.55)
38	Miscellaneous	11 (20.37)	21 (20.58)	30 (55.55)	59 (57.84)	13 (24.07)	22 (21.56)
	Total	538 (28.77)	645 (25.22)	475 (25.40)	666 (26.04)	857 (45.82)	1247 (48.75)
						1870	2558

The skilled and semi-skilled workers have accounted for more than half the total production workers in both 1971 and 1979. While the percentage share of semi-skilled workers has gone up slightly in 1979 as compared to 1971 and that of the skilled workers declined. In the case of the chemical industry however, both skilled and semi-skilled workers have registered a considerable increase. The reverse is true in the case of food products where the proportion of unskilled workers has gone up considerably from 37.5 to 58.73 per cent. Industry groups; textiles, chemicals and miscellaneous manufacturing industries have a higher proportion of skilled and semi-skilled workers as compared to the all industry average in 1979.

Of the total workers in the sample units local workers constituted around 85 per cent in 1979, (Table 8.5). Textiles have all their workers local; proportion of local workers is 95 per cent in chemicals and 90 per cent in basic metals. The industries with the lowest proportion of local workers, paper and paper products, and metal products and parts also had around three-fourths of their workers local. The skilled composition of the local workers follows the general pattern of the overall work-force.

Table 8.5 : Local Labour Force

Indu- stry Code	Industry Group	Total labour force (1979)	Local labour (from Ghaziabad itself)	% of local labour to total
20	Agro-based, food products	92	76	82.60
23	Textiles & textile products	154	154	100.00
28	Paper and paper products	219	169	77.16
30	Rubber: rubber & plastic products	299	241	80.60
31	Chemicals & chemical products	337	321	95.25
33	Basic metal and alloys	1010	907	89.80
34	Metal products and parts	532	388	72.93
35	Machinery & machine tools	387	322	83.20
36	Electrical machinery	244	216	88.52
38	Miscellaneous	115	100	96.95
Total		3389	2894	85.39

While analysing reasons for employing more and more local workers in the Ghaziabad industries, the availability of skilled and semi-skilled workers, within the district is found to be the major factor. Some of them have formal training from I.T.I. or from other training institutions, but most of them joined industries as unskilled workers.

and with years of practical experience behind them they have become skilled and semi-skilled workers. Attitudes of workers and employers, were found to be other significant reasons for employing (or giving preference to) local persons. Some of the entrepreneurs, interviewed have shown the interest in employing more workers from Ghaziabad district itself. They opined that, labour from outside does not stay for long time. 'They come, earn and go'. In particular, it was suggested that the workers from big cities do not stay long because lack of housing, transportation and entertainment facilities. Some of the respondents supported the employment of local labour as against labour from Bihar.⁴ 'Unskilled workers of Ghaziabad district and nearby areas are better than those from Bihar or from other States.' The outside labour might be cheap but the local labour is more honest and eager to learn.

8.5. Procurement of Raw Materials

It has already been indicated earlier (Chapter 7) that the district itself is not the major source of raw

⁴ According to Ghaziabad entrepreneurs, Bihar State is the cheapest and constant source of working force.

material for industries in Ghaziabad. It does however, cater to the requirements through intermediate products. Non-availability of local resources is made good by the fact that Ghaziabad has a well developed market and most of the raw material requirements can be procured from the depots that have been established either by the government itself or by the trading class that cater to the raw material requirements of these units.

Looking at the procurement of raw material and intermediate inputs by Ghaziabad industries; agro, electrical machinery, machinery and machine tools, basic metal and alloys emerged as the industry group which rely heavily on the local market for the purchase of their material inputs. In these industry groups over three-fourths of the units procure raw material from Ghaziabad itself.

Table 8.6 : Region-wise Procurement of Raw Materials - All Industry

(percentage)

Markets	Zero	1 - 5	5-25	25-50	50-75	75-95	95-100	Total
Local Market	32	-	5	7	11	6	48	77
Delhi Market	58	3	12	7	5	4	20	51
With in the State Markets (except Ghaziabad)	102	-	3	-	2	1	1	7
Outside the State Markets	87	-	4	8	5	1	4	22
Foreign Markets	107	-	-	-	2	-	-	2

Delhi is the next most important centre for the purchase of raw materials with around half of the units utilising this source in varying proportions of their requirements. Of these, 30 per cent units purchase 95-100 per cent of their requirements, 18 per cent between 50-95 per cent and 43 per cent below 50 per cent, from Delhi. Other districts of Uttar Pradesh do not figure as important source of raw material for Ghaziabad units as only 6 per cent units rely on this source. A sizeable number of units (around one-fifth) purchase raw material from other places, i.e., besides Uttar Pradesh and Delhi, within the country. Of these, 18 per cent units purchased about 100 per cent of their requirement, 27 per cent between 50-95 per cent, and the remaining purchase raw material upto 50 per cent from places other than U.P. and Delhi. Only two units purchased raw materials between 50-75 per cent of their requirement from foreign markets.

In aggregate the Ghaziabad industries revealed a high dependence on the local market for procurement of raw material and industrial inputs. Around 45 per cent units purchasing raw material between 95 and 100 per cent of their requirement, from the local market itself. The Delhi market is the next in importance with 18 per cent units purchasing about 100 per cent raw materials from there.

3.6. Market for the Finished Products

Much has already said of the well developed market structure of Ghaziabad when we studied the pattern of raw material procurement of the sample units of Ghaziabad. We shall now concentrate on the market from the point of view of disposal of their finished products. It is observed that while Ghaziabad is an important market by itself, Delhi and other out of State markets are equally important which is indicative of the wide spread demand of the products manufactured in the district. A few units are also producing for export; four per cent of the units export ranging from 25 to 100 per cent, of their product.

Around 74 per cent of the units are selling their products in the local market in varying proportions. Of these, nearly 30 per cent sell over 75 per cent locally and another 43 per cent between 25-75 per cent. This general pattern has not had any significant change over the last five years.

Delhi once again emerged as an important market for the finished products of the manufacturing industries of Ghaziabad. This is brought out by the fact that 66 per cent

Table 8.7 : Region-wise Sales of finished products - All Industry

		(in percentage)										
		Markets	Zero	Less than 10	10-15	15-25	25-40	40-50	50-75	75-95	95-100	Total
		<u>Local Market</u>										
A.	In 1979	24	8	1	9	9	7	13	9	11	67	
B.	5 years ago	25	4	5	9	8	6	13	8	13	66	
		<u>Delhi Market</u>										
A.	In 1979	31	2	5	3	14	5	19	4	8	60	
B.	5 years ago	36	1	4	4	10	5	15	7	9	55	
		<u>Outside Markets</u>										
A.	In 1979	36	4	4	6	8	8	16	3	6	55	
B.	5 years ago	41	2	2	8	9	6	14	4	5	50	
		<u>Export Market</u>										
A.	In 1979	87	-	-	-	1	1	1	-	1	4	
B.	5 years ago	86	-	-	-	1	2	1	-	1	5	

of the units sell their goods in this market. Over 50 per cent of these units are selling over one half of their total produce in Delhi. Within the last five years the dependence on this market has increased by around 5.5 per cent.

Places other than Ghaziabad and Delhi, though less significant for the procurement of raw materials, have a prominent place as markets for the manufactured products of Ghaziabad. As many as 60 per cent units rely on this market, with around 45 per cent of these units selling 50 per cent or above of their total produce there. This percentage has remained unchanged over the last five years although the proportion of units selling in this market has gone up marginally.

Chemical and chemical products group is an industry group which has total reliance on the Delhi market for the sale of its products : 78 per cent of chemical units are selling above 50 per cent of their total production in Delhi. It is not that sale is not being done locally or elsewhere, but the number of units selling locally or outside in places other than Delhi is small and the proportion of sale to these places is limited.

Industry group, basic metals and alloys has nearly 90 per cent units selling in the local market, over one half of these sell 50 per cent or above of their production in this market. Delhi is also an important market though on a lower scale with 58 per cent of the total units selling below 40 per cent of the total products.

The local market as well as that Delhi have equal significance with respect to the machinery and machine tools industries. In the case of electrical machinery and parts over 80 per cent of the units are selling their products in markets outside Ghaziabad and Delhi. Ghaziabad, is itself an important outlet for the products of this industry group with over 50 per cent of units selling over one half of their products locally.

8.7. Conclusion

The various aspects studied above indicate that the industrial sector of Ghaziabad contributes significantly in the overall development of the region. In the first instance, it is observed that a high proportion of the manufacturing sector in the net domestic product (commodity producing sectors) has led to a higher level of aggregate output and incomes. A high percentage of the workers in the manufacturing sector has raised the productivity levels.

A larger proportion of industry in the employment and production structure thus leads to higher per capita income.

Industrialisation has contributed in actualisation of the employment and entrepreneurial potential in Ghaziabad. There has been a 37 per cent rise in employment between 1971 and 1979, and in the latter period employment of local workers was above 85 per cent. While employment generation has received a substantial boost, there has also been a corresponding improvement in the skill formation of the industrial workforce. Local entrepreneurs accounted for over one half of the total. The significant point about them being that they are in general highly educated and around 20 per cent of them are engineers. Being young, educated and coming from business and trade background they possess the acumen that goes to make a successful entrepreneurs.

Although the district is not rich by way of natural resources the fact that Ghaziabad has a very well integrated industrial structure and developed market, more than compensates for this shortcoming. The relative lack of local raw material base of industries is more than offset by local supply of intermediate products due to developed linkages among industries. Over 70 per cent of the

entrepreneurs are in a position to obtain their raw material and intermediate input requirements from the local market itself. The local market plays an equally important role in the sale of finished products. Over 72 per cent of the units sell their products, partly or wholly, in the local market itself. The situation gets a further impetus by virtue of its close proximity to Delhi. Thus, overall, the development of industrial sector in Ghaziabad has been able to provide significant forward and backward linkages in production, employment and income generation in the district, accelerating the growth in all sectors of the economy.

Chapter IX

ROLE OF PROMOTIONAL INSTITUTIONS IN INDUSTRIAL
DEVELOPMENT OF GHAZIABAD DISTRICT

In Uttar Pradesh, like in other States in India, various promotional and financial institutions offers facilities in areas which have the potential for industrial development. These facilities include the entire range of services beginning from procuring of land, construction of sheds, assistance in the procurement of plant and machinery, feasibility studies and market surveys, finance for fixed and working capital as well as in marketing of the product. Several specialised institutions such as Uttar Pradesh State Industrial Development Corporation (UPSIDC), Uttar Pradesh Financial Corporation (UPFC), Pradeshiya Industrial Investment Corporation of Uttar Pradesh (PICUP), have been created to provide these facilities to the industries, particularly to the new units. The State government also assist industries directly through the Directorate of Industries and its district offices. Besides, the Central Financial Institutions, such as, Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFICI) and Commercial Banks also provide financial assistance to industrial units.

It is difficult to single out and isolate the role of any one institution or measure in the industrial development of an area, as the various facilities offered make an impact in unison with each other. What can be

attempted is, therefore, a descriptive account of the activities of the different institutions with a view to having a qualitative idea of their absolute and relative roles.

In the sample of factories, covered in our study, around 85 per cent of the units reported as having used one facility or the other, offered by promotional and financial institutions. Assistance in getting the land from UPSIDC and finances for fixed capital from UPFC was found as the most commonly used facilities. Financial assistance in the form of working capital loans seems to be next most frequently used assistance provided by the commercial banks. The other important assistance availed of is in the procurement of raw materials, a facility offered by the Uttar Pradesh Small Industries Corporation.

Thus it can be broadly pointed out that infrastructure and finance are the two important aspects in which the industrial units have benefitted from institutional facilities. Hence, in the present chapter we plan to attempt the role of two institutions : Uttar Pradesh State Industrial Development Corporation (UPSIDC), a promotional institution mainly providing industrial infrastructure and Uttar Pradesh Financial Corporation (UPFC), providing financial assistance.

I

9.1. Role of Uttar Pradesh State Industrial Development Corporation (UPSIDC)

Uttar Pradesh State Industrial Development Corporation, an agency designed among others to serve as an instrument for planned and rapid industrialisation in the State was set up in 1961, with its headquarters at Kanpur. Its regional offices are located at Ghaziabad and Lucknow. It also has a liaison office at Delhi.

The need of land for setting up industries is met through two sources : (i) private parties, and (ii) through government agencies. UPSIDC develops land in industrially potential areas and provides developed sites, served by good roads, power sub-stations, bank, post office, telephone connections, and efficient drainage system.

The major activities of the corporation in respect to industrial development of an area can be divided into three parts; (i) Development of Industrial Area, (ii) Setting up of joint sector projects, (iii) providing financial assistance by way of underwriting of shares, equity participation and bridging loans. In this section, the role of the corporation in the industrial development of Ghaziabad district is analysed only from the land utilisation and financial angle. The relevant data and information are gathered from the annual reports of the

corporation and the other published and unpublished records and statements made available by the corporation's head office at Kanpur. Discussions with its officials helped in the analysis and interpretation of the data.

9.1.1. Development of Industrial Area

UPSIDC has played an important role in the industrial area development. Out of the 40 industrial areas in 25 districts of the State, nine have been set up in Ghaziabad alone and are controlled by regional office of the corporation, situated at Ghaziabad itself. The name of the industrial areas along with their year of establishment are listed below :

1.	Loni Road Industrial Area	1967
2.	Meerut Road Industrial Area	1967
3.	Sector 22	1968
4.	Kavi Nagar Industrial Area	1969
5.	Sahibabad Industrial Area	1970
6.	Bulandshahr Road Industrial Area	1972
7.	Loha Mandi	1972
8.	South Side of G.T. Road	1972
9.	Loni Estate	1977

Table 9.1 : Development of Industrial Areas by UPSIDC in Ghaziabad District

(sq. meters)

Name of the Site	Total plots		Allotted plots		Plots allotted but vacant		Land available for allotment		Plots under dispute	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Bulandshahr Road Industrial Area (Site I) (26.67)	584	1681339	548	1565379	100	217019	5	21338	11	43467
Lohia Mandi (17.35)	380	84214	346	75786	232	47175	15	3662	19	4766
South Side of G.T. Road Industrial Area (Site No. 2) (6.80)	149	1462859	136	1321437	68	219413	1	1949	7	29163
Loni Road Industrial Area (Site No. 2) (2.51)	55	879953	51	827838	1	34841	-	-	1	24843
Meerut Road Industrial Area (Site 3) (7.44)	163	1116216	155	1066667	7	43837	-	-	3	11229
Sahibabad Industrial Area (Sector 17) (8.26)	608	5688444	568	5269142	257	520897	3	4784	-	-
Kavi Nagar Industrial Area (Sector 22) (1.69)	181	609184	165	584148	5	7158	-	-	7	11820
Loni Estate (1.46)	37	365686	35	358185	3	12142	-	-	1	4273
Ghaziabad	32	21848	29	19208	-	-	-	-	2	1760
Uttar Pradesh	2189	11909743	2033	11087790	673	1102482	24	31733	51	131321
	6781	30456593	4852	21937973	2236	6207868	1446	6689443	224	946963

Sources : i) Data relating to Ghaziabad are for 30.4.1983 while for U.P. the data relate to Oct. 1982.
ii) Land Utilisation Report for the Month upto 30.4.1983 for Ghaziabad and from Office Record of UPSIDC for U.P.

To promote, improve, establish and develop industries in the district, the State Industrial Development Corporation has developed 2189 plots covering 1190974 sq. meters of industrial land by the end of October 1980. In percentage terms the Ghaziabad district has around 32 per cent of the total plots in the State. The number of allotted plots in the district is 2033 which is as high as 92.87 per cent of the total developed plots as compared to the State percentage of 71.55. The land area under these allotted plots are 11087.79 hectares. However, in the district, 673 allotted plots are still vacant, which is 33 per cent as compared to State's 46 per cent. Besides this there are 51 plots under dispute in the district.

Looking at the various industrial areas in the district, Bulandshahr road industrial area along with 'Loha Mandi', accounted for around 44 per cent plots in the district, followed by Sahibabad Industrial Area (28 per cent), Kavi Nagar industrial area (8.26 per cent), and Meerut road industrial area (7.44 per cent). The remaining industrial areas in the district are comparatively small in size. These small size areas are functioning at their full capacity. It is evident from the fact that particularly in these small industrial areas, the number of vacant plots are very small. A large number

of plots are vacant in the industrial areas of larger size. Loha Mandi alone has 232 vacant plots. Actually Loha Mandi was developed to keep all the iron and steel dealers at one place but this scheme could not be implemented : the existing iron and steel units were reluctant to shift to 'Loha Mandi' as they felt well established and well connected to the various industrial areas from their present location. The other area where a large number of plots remain vacant is Sahibabad (45 per cent of the total allotted plots in the district).

9.1.2. Financial Assistance

(a) By Way of Under-writing : The Corporation provides financial assistance by way of under-writing the shares of public limited companies in private sector which intend to set up an industrial units in Uttar Pradesh or take up expansion programme of the existing units. The assistance is ordinarily given upto 15 per cent of the issued capital. Various terms and conditions have to be fulfilled by an industrialist before the corporation agrees to the under-writing of its shares.

It is evident from the Table 9.2 that, corporation had acquired shares by way of under-writing in 12 companies (28.57 per cent) in Ghaziabad as against 42 in

the state as a whole by the end of March 1981. The number of shares acquired in the district are 55699 (state 228339) of Rs.100 each. The investment in these shares in the district was Rs.55.70 lakhs as compared to State's Rs.2 crore 8 lakhs which is 27 per cent of the investment in the State.

Table 9.2 : Financial Assistance by UPSIDC

	No. of facto- ries	No. of shares	Cost as at 31st March 1981 (Rs. lakh)	Underwriting commission and/or brokerage (Rs. lakh)	Net cost as on 31st March 1981 (Rs. lakhs)
<u>Share Acquired as Underwriters</u>					
Ghaziabad	12	55699	55.70	1.67	54.03
Uttar Pradesh	42	228339	208.31	6.25	202.05
<u>Equity Shares</u>					
Ghaziabad	11	2275469	120.03	3.96	116.08
Uttar Pradesh	39	4024518	286.04	9.23	276.81
<u>Bridging Loans</u>					
Ghaziabad	1	72500	7.25	-	-
Uttar Pradesh	28	1126965	121.13	-	-

Source : Annual Report, No.20 of UPSIDC.

(b) By Way of Equity Participation : A new entrepreneur and/or technologist or professional entrepreneur, with a certain minimum and relevant managerial competence is entitled to the financial assistance offered by UPSIDC by way of equity participation.

The figures show that the corporation's equity shares, on 31st March 1981, numbered 2275469 in 11 companies in the district. The corresponding figures for the State were 4024518 shares in 39 companies. In all, the corporation has invested Rs.one crore twenty lakhs in the district which is around 42 per cent of the total investment by the corporation in equity shares in the State (Rs.2.86 crores). The role of the Corporation as investor in the form of equity shares is thus very significant in the district. More than 25 per cent of companies are getting financial assistance to the tune of Rs.1.20 crores of the total assisted companies in the State.

(c) By Way of Bridging Loan : The Corporation provides bridging loans against term loans sanctioned by State financial institutions. Out of the total 28 companies in the State helped through this scheme by the Corporation, only one company has availed this facility in the district. The total number of shares acquired in the sole company of the district are 72500 as against 1126965

at the State level. The cost as on 31st March 1981 of these shares was Rs. 7.25 lakhs.

The scheme of underwriting of shares and equity participation assumed considerable significance in the Ghaziabad district and accounted for a greater part of the investment of the corporation. If we consider the total investment of the corporation in all the three types of schemes, viz., shares acquired as underwriter, equity participation and bridging loans, we notice that the first two schemes had significant share in the Ghaziabad industries.

II

9.2. Role of Uttar Pradesh Financial Corporation (UPFC)

The objective of this section is to examine the role of financial institution (UPFC) in the industrial development of Ghaziabad district, specially in small scale sector. The annual reports of the corporation, constitute the source of the data for this study. Though the role of the Corporation in the district is significant since its inception i.e. 1954, the period up till 1976 can not be studied for the Ghaziabad district alone because the district was formed only in 1976. It may, however, be

stated that, cumulative figures for the corporation loans (since the inception of UPFC) are taken. The study would broadly reflect the working of the UPFC since its inception.

The Uttar Pradesh Financial Corporation was established in 1954 by the State government. The Corporation has its head office at Kanpur and regional, zonal, branch and sub-offices in 14 other district headquarters. The region-wise break-up is West-4, Central-2, Eastern-4, Hill-4, and Bundelkhand-1. The Corporation also has a regional office in New Delhi. It is authorised to grant financial assistance to industrial concerns. Its activities, at present, are confined to granting of loans and issue of deferred payment guarantees to industrial concerns for purchase of indigenous machinery.

The Corporation operates two types of schemes viz. the Corporation loan scheme under which assistance is provided by the UPFC out of its own funds to all types of industries, and the agency loan scheme (as agent of the State government) whereby assistance is provided to small scale industries.

In the backward districts of the State the UPFC offers assistance on concessional terms i.e. lower rates

of interest, longer grace period upto 3 years, longer repayment period upto 15 years, reduced margin and lower equity debt-ratio, reduction by 50 per cent in the commitment levy and other processing and legal charges and payment of guarantee commission by the corporation in respect of SSI units.

The Corporation has introduced special schemes for technical entrepreneurs. No rigid debt-equity ratio is insisted upon. Special repayment procedures are applied to enable the entrepreneurs to build up adequate internal resources to strengthen the equity structure of the concerns in the initial years. The margin of security is reduced from 25-50% to 15-25% in non backward districts and further to 10-15% in backward districts.

The UPFC has been one of the most prominent financial institutions of the State promoting industrial activity. As the years have gone by its participation has shown a very rapid increase. This is evident from the fact that right from 1956 to 1965 the UPFC was functioning through its head office alone. By 1970 it had 3 offices which rose to 11 by 1975 and stood at 16 in 1980. This became necessary since during the Fourth Plan period greater emphasis was laid on the promotion

of industrial activity and to cope up with ever increasing demand for loans and to speed up its functioning the UPFC had to think in terms of regional offices, branch offices as well as sub-offices.

Let us now concentrate on the role of UPFC in the district of Ghaziabad. The UPFC treats the district of Ghaziabad as partly backward, the part of the district which consists of NOIDA is treated as backward. The Corporation has separate offices in both Ghaziabad and NOIDA respectively. For analysing the assistance extended by UPFC to Ghaziabad we shall focus our attention on the effective sanction and disbursement of Corporation loans to the small scale and other than small scale units of the district.

The UPFC had sanctioned Rs.841.68 lakhs to 315 small scale units and Rs.758.13 lakhs to 81 other than small scale units by 31.3.1978. As against this sanction the disbursement was Rs.441.25 and Rs.729.30 lakhs respectively in the small scale and other than small scale units. It can be seen that disbursement as a percentage of effective sanction is 52.42 per cent and 96.20 per cent in the case of small scale and other than small scale units respectively. Comparing the district with the State as a whole we find that out of

the total effective sanction Ghaziabad has claimed 16.26 per cent and 25.28 per cent of the amount sanctioned to the small scale and other than small scale units. Similarly out of the total disbursement in the State the share of Ghaziabad was 17.12 and 38.87 per cent for the two categories respectively.

As many as 1230 small scale units had been selected for sanction of loans to the tune of Rs.2724.83 lakhs by 31st March 1981. This is almost a four-fold increase in the number of units and over a three-fold increase in the amount sanctioned. In the case of other than small scale units, however, the units increased from 81 to 99 and the sanctioned amount to 1051.23 which is a 72.12 per cent increase over 1978. This is in line with the policy of the UPFC which concentrates in helping the small scale units. There was an improvement in the disbursement to the small scale units whose amount increased to Rs.1566.25 lakhs while the disbursement to the other than small scale units was Rs.1033.23 lakhs. By 1981 Ghaziabad had received 24.42 and 23.55 per cent of the effective sanction and disbursement out of the total sanction and disbursement to the State as a whole. These figures are higher than the corresponding figures for 1978. Effective sanction

**Table 9.3 : Effective Sanction and Disbursement of Corporate Loans in Ghaziabad
Western Region and Uttar Pradesh (Cumulative Figures)
(Rs. in lakhs)**

District/Region/State	Effective Sanction			Disbursement		
	small scale		Other than small scale	small scale		Other than small scale
	Units	Amount	Units	Amount	Units	Amount
<u>As on 31.3.1978</u>						
Ghaziabad	315	841.68	81	758.13	267	441.25
As % to the U.P.	(14.00)	(16.26)	(25.55)	(25.28)	(16.66)	(17.12)
Western Region	1061	2451.40	158	1537.36	803	1261.23
As % to the State	(47.15)	(47.36)	(49.84)	(51.27)	(50.09)	(48.92)
Uttar Pradesh	2250	5175.89	317	2998.49	1603	2577.87
<u>As on 31.3.1981</u>						
Ghaziabad	1230	2724.83	99	1051.23	885	1566.25
As % to the U.P.	(14.84)	(24.42)	(27.05)	(27.19)	(17.57)	(23.55)
Western Region	4324	6105.73	179	1887.01	2661	3632.94
As % to the State	(52.17)	(54.71)	(48.91)	(48.80)	(52.84)	(54.62)
Uttar Pradesh	8289	11159.16	366	3866.48	5036	6651.43
<u>As on 31.3.1982</u>						
Ghaziabad	1740	4172.43	110	1337.10	1294	2358.25
As % to the U.P.	(14.37)	(27.87)	(27.57)	(28.62)	(15.07)	(26.06)
Western Region	6331	8461.95	210	2425.85	4512	5128.59
As % to the State	(52.28)	(56.51)	(52.63)	(51.93)	(52.54)	(56.66)
Uttar Pradesh	12109	14973.70	399	4671.73	8587	9050.86

Source : Annual Reports of UPFC.

of Ghaziabad in the case of other than small scale units was 27.19 per cent of the total sanction in the State. This also registered an increase over the 1978 percentage but in case of disbursement to the other than small scale units there was a decline from 38.87 per cent in 1978 to 30.18 per cent in 1981.

The Corporation continued its steady progress such that, by March 1982, 1740 small scale and 110 other than small scale units had been selected and the effective sanction was Rs.4172.43 lakhs and Rs.1337.10 lakhs respectively. The percentage of effective sanction in Ghaziabad (to small scale units) to that of the western region stood at 27.87 per cent and it can be seen clearly that over the years the district has been getting an increasing percentage of the effective sanction. Disbursement has like-wise shown a continuous increase over the years with the disbursement in 1982 being 26.06 per cent out of the total disbursement in the State. However disbursement to other than small scale units as a percentage of disbursement in the State as a whole shows a gradual decline from 38.87 per cent in 1978 to 30.17 per cent in 1982. By way of coverage it has however increased from 81 units in 1978 to 95 units in 1981 and 104 units in 1982. On the whole, therefore, it can be

seen clearly that the State Financial Corporation has been playing a significant role in promoting industrial activity in the district.

9.3. Conclusion

Thus, Uttar Pradesh State Industrial Development Corporation and Uttar Pradesh Financial Corporation, have played a very significant role in speeding up the process of industrial development of Ghaziabad. While Uttar Pradesh State Industrial Development Corporation has a regional office at Ghaziabad, the Uttar Pradesh Financial Corporation not only has an altogether separate office for the Noida complex. The entrepreneurs, therefore, find it much more convenient to expedite their work relating to either of the two institutions. Of the total 40 industrial areas developed by the Uttar Pradesh State Industrial Development Corporation in 25 (out of 56) districts of the State as many as 9 (22.5 per cent) are in Ghaziabad alone. Similarly, out of the total plots allotted by it, the share going to Ghaziabad is as high as 41.9 per cent.

The Uttar Pradesh Financial Corporation has also been actively engaged in aiding both small scale and

other than small units of the district. Out of the effective sanction to the small scale units in the State as a whole 27.86 per cent have gone to Ghaziabad which has also received 28.62 per cent of the effective sanction in the case of the other units. Ghaziabad has received over one-fourths of the total disbursement against the sanctions made to the small scale units and slightly less than one-thirds of the disbursement made to units other than small scale.

The speed with which the Financial Corporation has stepped up its activities in the district is evident from the fact that while by 1978, 315 small scale and 81 other than small scale units had been selected for the sanction of loans, by 1982, this number had gone up to 1740 and 110 respectively for the two categories of units. Similarly, effective sanction stood at Rs.841.68 lakhs and Rs.758.13 lakhs in the case of these two types of units and these amounts had registered a very substantial increase. Within a four year period (1978-82) by which they had touched the level of Rs.4172.43 and Rs.1337.10 lakhs. The rate of disbursement had also gathered speed within this period disbursement as a percentage of effective sanction was 52.44 per cent in 1978, whereas, the percentage in 1982 had increased to

56.52. Thus we find that the district has received special treatment from these institutions as compared to the other districts of the State.

Chapter X

SUMMARY AND CONCLUSIONS

The primary objective of our study has been to identify the factors that have facilitated rapid industrial development of a relatively little industrialised region, in a short period of time. For this purpose, we have undertaken a detailed study of the economic and industrial base of Ghaziabad, the pattern and structure of industrial development over a period of about ten years, relative importance of various factors in the location and growth of industries and, role of government policies and promotional programmes, on the pace of their development. We now recapitulate the main findings of our analysis in this chapter with a view to drawing certain conclusions and implications for industrial development of relatively less industrialised areas.

The industrial sector of Ghaziabad has developed at a fairly rapid pace since independence and particularly so within the last two decades. In a state which does not have a well developed industrial sector on the whole, Ghaziabad has begun to emerge as prominent with not only a substantial growth in the number of industries, but there has also been substantial diversification of units with the result that almost all types of industrial units are found located within the district.

10.1. Agricultural Base of Ghaziabad Economy

How far has the local economic base, particularly agriculture, helped in the process of rapid industrialisation of Ghaziabad? Agriculture which plays a vital role in the industrial development by supplying food to the workers on the one hand and some of the basic inputs to the resource based industries on the other, is found very well developed in Ghaziabad. This fact is adequately reflected by : a 34.5 per cent of the gross cropped area being under cultivation of commercial crops; a cropping intensity of 157 and; an irrigation intensity of 153. All these figures are higher than the corresponding averages obtained in the state. Resource based industries like leather and leather products and indigo provided the earliest seeds of industrialisation in Ghaziabad. In subsequent stage, sugar has been the one important industry which has grown obviously primarily as a result of widespread development of sugarcane cultivation in the district. Processing of agriculture products and the production of agriculture implements are other significant industries where the forward and backward linkages of agriculture are evident.

10.2. Brief History of Industrialisation in Ghaziabad

In Ghaziabad, possibly the oldest industry was the leather and leather products, dating back to the nineteenth

century. Indigo units were established during the early nineteenth century. However, while the indigo units died out totally with the production of synthetic dyes, the leather industry in the district has remained confined to the household and cottage industry level only. The sugar industry, on the other hand, developed in the twentieth century with the first factory being setup in 1932. The district now has a few big sugar factories and numerous khandsari units which utilise sugarcane locally available.

The establishment of the modern industries can be said to have begun with the advent of the diesel oil engines, oil expellers and the casting and forging units all of which were introduced between 1945 and 1960. The well developed agricultural sector provided the demand base for the diesel engines. The units developed in a large number and catered to the requirements of the cultivators for irrigation purposes since power was not adequately available. However, the entrepreneurs did not pay adequate attention to the quality of their product as a consequence of which the demand for the products of these units dwindled and the entrepreneurs were forced to divert their resources to alternative avenues of investment. Oil expeller producing units, although substantial in number are, by and large, in the small scale

sector only. Similarly, the casting and forging units have also grown at a fair pace within the district.

10.3. Industrial Base of the District

On the whole, the district at present has a diversified industrial structure. The most prominent among these are the non-metallic mineral products units and the metal products industries which have around 15 and 19 per cent of the total industrial units of Ghaziabad. Other industry group, constituting between 5 to 10 per cent of the total industrial units are printing and publishing, rubber and rubber products, chemicals, basic metals and machinery and machinery tools industries. Thus engineering group of industries are the most prominent in the industrial structure and have around 40 per cent of the total units in the district.

In terms of employment, food and food products, textiles and non-metallic mineral products units are the highest employment generators and these three groups together providing employment to around 43 per cent industrial workers. Of these, textile and textile products alone accounts for nearly 19 per cent of the total employment.

The highly diversified nature of industrial structure of Ghaziabad is indicated by a very low value of, 0.05, of the coefficient of its specialisation suggesting that the industrial structure of Ghaziabad is as diversified as that of State. Within this diversified structure of industries a high degree of specialisation is found in the industry groups; basic metals, metal products, machinery (including electrical machinery), non-metallic mineral products and textiles as indicated by the values of their location quotients.

Both large as well as small scale sectors are found well developed. Out of the total number of units nearly four-fifths were in the small scale sector in 1979. Within a four year period (1976-79) there has been a rise in the proportion of employment, capital invested and production in the small scale as compared to the large scale sector.

10.4. Size Structure of Units and Characteristics of Entrepreneurs

A detailed analysis of a sample of 109 industrial units also brought out the importance of small units in the industrial structure of the district. The overall average employment size per unit worked out to 26 workers. Average employment in industry groups rubber and rubber

products, basic metals and electrical machinery was much above the all industry average while average employment was below the all industry average in the case of industry group machinery and machine tools. The level of skill formation of workers employed is found quite high with over one half of the total production workers belonging to the skilled and semi-skilled category.

On the whole, the sample units were found centred around a fixed capital size of Rs.5 lakhs and below, and a total productive capital size of less than Rs.10 lakhs. However, within each industry group there were wide variations in both fixed and total productive capital. The small size group dominate the sample in the output structure as well with over 70 per cent units having an output size below Rs.20 lakhs although units are reasonably well distributed among all size groups of output. On an industry-wise basis electrical machinery, basic metals and alloys have large sized units while textiles, machinery and machine tools and 'other' manufacturing industries have low average output per unit. Labour productivity varies widely from industry to industry with agro based and chemical industries having a very large average output and value added per worker whereas

textiles, metal products, machinery and miscellaneous products yield a low value of output per worker.

The Ghaziabad entrepreneurs are relatively young, having an average age of around 40 years, highly educated and most of them with a background of business and trading. In the entire sample, only one entrepreneur was illiterate. A high percentage of the entrepreneurs were trained engineers.

Over one half of these entrepreneurs were local and included those who had permanently settled in Ghaziabad itself in the post partition period. Of these entrepreneurs, around 40 per cent had five or more years of experience in the same line of factories. It was found that they had been associated with their respective units as suppliers of raw-materials, in managerial capacity and in some cases as skilled technicians.

10.5. Growth of the Industrial Units

Industrial units in Ghaziabad experienced a high growth rate of around 11 per cent per annum in aggregate output as well as in the value added between 1971-79.

that is twice that obtained in the State and India during the same period. Industrial growth of the district is characterised, besides a faster growth of output, by value adding nature of industrial activity, fast rate of increase in both labour and capital productivity and a relatively low increase in capital intensity. Within this overall pattern, however, individual industry groups were found to have variations with respect to all the four variables mentioned above. Thus the rubber industry had a very high growth rate of output (26.27 per cent) while general and electrical machinery and miscellaneous products had a low rate of growth of output. Like-wise, in the case of value added, the food product group had a very high growth (over 40 per cent) and textiles, rubber products and basic metal units had a higher than average growth rate; but most of the other industry groups had an average growth rate of value added much below the average. Value added per worker was consequently subjected to wide variations from one industry group to another.

Labour productivity was found increasing in rubber products, metal products, electrical machinery, basic metals and chemicals while capital productivity has increased in paper products, rubber, chemicals and basic

metal industries, capital productivity has on the whole had a low growth with the exception of textiles, metal and food products.

Food products and textiles group emerged with a high rate of growth of output, value added, capital and labour productivity and capital intensity, while in the case of general machinery and electrical machinery the growth rates of all these variables were found below the all industry average. Chemicals was the only group which had a growth rate around the all industry average for all variables.

An analysis of the relationship of the size of units with growth rates in output and employment brought out a negative relationship between growth rates and size of output of units. Thus, the law of Proportionate Effect implying increasing size inequately among units did not hold and it seems that differences in size of units are narrowing down with growth of units.

10.6. Factors of Locational Advantage

Having analysed the structure and growth of the units an attempt has also been made to see the factors which provide the locational advantage and make Ghaziabad

a suitable choice for the location of industrial units. It is observed that a very well developed market within Ghaziabad, the proximity to Delhi, the availability of industrial areas/estates, the presence of skilled manpower, very good road and rail links as well as an overall development of infrastructure facilities make Ghaziabad ideally suited from the location point of view.

Although most of the raw materials used by the various industries is not of local origin, this drawback is compensated adequately by the well developed market so that nearly 70 per cent units procure their raw material, either partly or wholly, from the local market. Then again, the importance of the local market is highlighted by the fact that nearly three-fourths of the units rely upon it for the disposal of their finished products.

Proximity to Delhi emerges as a major locational advantage to industries in Ghaziabad. Not only does Delhi provide the biggest market of northern India but being the capital, it houses all the important government offices from which entrepreneurs obtain various licences, permits and quotas for their industrial units. In fact, Delhi is so conveniently located that most of the big

industrial houses, even if having factories elsewhere, prefer to keep their head office at Delhi itself.

The development of infrastructure facilities like roads, power, industrial areas/estates etc. have had their due share in attracting entrepreneurs to Ghaziabad. Discussions with the entrepreneurs revealed that over 70 per cent of them choose Ghaziabad for the establishment of their units on account of the developed infrastructure facilities which are offered by Ghaziabad.

Another factor which has played a significant role in the industrial process is the fact that while Ghaziabad like any other town or city had surplus manpower which could easily be diverted to industries. Moreover, the relatively high proportion of skilled and semi-skilled labourers in Ghaziabad have been by itself an attraction to the entrepreneurs. Out of the total employment in the sampled units local employment figures were as high as 85 per cent of whom over one half are skilled or semi-skilled.

10.7. Role of Promotional Institutions

Last but not least, the government has also played a positive role in making Ghaziabad attractive for

industrial location through the implementation of various programmes via its promotional institutions.

The Uttar Pradesh State Industrial Development Corporation and Uttar Pradesh Financial Corporation are the two most prominent among such institutions and have given special treatment to the district. The UPSIDC for instance has developed, in the district, nearly one fourth of the total industrial areas/estates developed by it in the State as a whole. Similarly, out of the total plots allotted by it, the share of Ghaziabad is as high as 42 per cent. The UPFC, on the other hand, has been more liberal in the sanction and disbursement of loans to both small and other than small sector units in the district as compared to the remaining districts of the State. This fact is amply brought out by Ghaziabad receiving over one fourth of the total effective sanction as well as of total disbursement of loans to the small scale sector of the State.

All these factors together have provided the district an advantageous location which can be seen from the fact that cost output ratio, which could be considered to be summary result of location advantage, was found lower in almost all industries in Ghaziabad as

compared to the average of the State. In other words in most industries Ghaziabad location provides higher potential for profitability than any other average location in the State. The overall industrial activity in Ghaziabad, however, was found to be neither worse off nor better off in Ghaziabad location. Industries which offered significant locational advantage in Ghaziabad were : paper and paper products and chemicals.

10.8. Impact of Industrialisation on the Regional Economy

As a consequence of rapid industrialisation the economy of Ghaziabad district as a whole has registered dynamic changes. These changes can be viewed in the rising income levels and the increasing share of manufacturing to the net domestic product. The manufacturing sector is contributing 58 per cent to the net domestic product (commodity producing sectors) as compared to the 16 per cent in the State as a whole (1978-79) and per capita income of the district is Rs.624 as compared to Rs.343 of the State. Further, a speedier transpiration of Ghaziabad economy into industrialisation, has led to faster growth of income by raising general productivity level. Secondly, industrialisation has given rise to

additional employment opportunities whereby the surplus labour from the less productive agricultural sector is been increasingly diverted to the secondary sector. The secondary sector is emerging as prominent not only from the point of view of income generation but also for offering better employment opportunities.

10.9. Conclusion

In conclusion let us try to examine the Ghaziabad experience in rapid industrialisation in relation to certain propositions on the processes and policies on industrialisation of relatively backward areas. These propositions relate to the dependence of industrialists on local resource base and market, on the choice of the pattern of industries and their inter-relationships, and effectiveness of government policy and measures.

- (1) It must be pointed out that the process of rapid industrialisation in Ghaziabad during 1960's and 1970's did not begin exactly with a particularly low level and base of economy. Agriculture and trading sectors were already well developed and certain industries; leather and textiles have had a long history in Ghaziabad. Sugar industry had also established itself strongly in the

districts economy quite a few decades back. During the Second World War defence requirements led to establishment of industries like iron and steel and expansion in the textiles. Agricultural development in the post-Independence period led to the creation of a steady market for the industry manufacturing agricultural implements. Thus an industrial base, although not very well integrated, was already present by the time the process of rapid industrialisation began in the district.

With a reasonably sound economic and industrial base, and also an autonomous tendency of industries to come to Ghaziabad, mainly as an overflow of almost saturated Delhi, various policies and measures of the government for the promotion of industrial activities in industrially backward areas played a very effective, supportive role. No doubt much more concerted efforts were also made in Ghaziabad than elsewhere. In this perspective, it is doubtful whether the policies would have been as effective in case of districts which have little to offer by way of an economic base either in the agricultural, industrial or the trading sector, and where promotional efforts are also offered in small doses. The case study of Ghaziabad suggests that a reasonable economic base is a pre-requisite for the promotion of rapid regional industrialisation.

(2) ✓ Another significant point that the experience of Ghaziabad brings out is that the industrial development need not necessarily depend on the local resource base. What is more important is that industrialisation should proceed as a well linked process whereby products of one industry act as inputs for others thereby providing a chain of forward and backward linkages. It is seen that even though early industries in Ghaziabad were based on local raw material, the rapid industrial development during 1960's and 1970's was primarily based on non-local material based engineering industries. ✓ These industries developed in an integrated manner, creating demands for the products of each other through forward and backward linkages. ✓ It is such a pattern of industrialisation which alone seems to have a quicker and sustained pace today, as against the local resource based and unintegrated expansion of industrial units.

(3) Not only the local production of raw material is not necessary, it seems that it is also not necessary to have a local market in terms of final use of products, if marketing channels and institutions are adequately developed. ✓ The trading sector of Ghaziabad, which was already well developed, provided the necessary channels

and networks both for procuring materials and sale of products. Market, as a factor in location, therefore, need not be interpreted today in narrow terms of local demand, but in terms of the availability of marketing facilities.

(4) Close proximity to a major commercial, industrial or service centre is a factor that seem to more than compensate for the lack of local material and market. In Ghaziabad's case, its location near Delhi seems to have made a major contribution. To begin with, Delhi based entrepreneurs found Delhi a difficult place for location of new units as well as expansion of existing ones, since the cost of land increased manyfold and also because the authorities had imposed restrictions on the establishment of units within Delhi. Ghaziabad besides being close to Delhi, had abundant land at cheap rates and thus offered an ideal location to the entrepreneurs of Delhi. With units located at Ghaziabad the well developed market of Delhi catered to the needs of these units whether it was with respect to their raw material requirements or the sale of the finished products. The heavy reliance on the Delhi market is brought out by the fact that around 45 per cent units purchase raw materials either wholly or partly from that market and nearly 65

per cent of the units rely on it for the sale of their finished products to some degree or the other. The various central government offices from where licences, quotas, permits etc. are obtained being at Delhi was an added attraction provided by the central capital. In fact, Ghaziabad has had little connection with the other districts of State in the process of its industrial development.

It appears that promotion of industrial development can be carried-out much more effectively in those districts which are in proximity of developed districts rather than in the backward and remote districts since the latter present a more disadvantageous position than the backward districts in proximity of developed ones. This is probably the reason why even the various incentives and concessions and developed industrial areas with infrastructure facilities provided by the government fail to provide sufficient inducement to the entrepreneurs in the remote districts.

(5) It must be further emphasised that effectiveness of promotional measures for industrialisation depends, not only on the available industrial base, location and

structure of industries, but also the magnitude of such effects. Isolated efforts with a limited and adhoc assistance is probably hardly effective.

In the case of Ghaziabad the efforts have been in the form of package of different facilities and quantum of assistance has been large.

The concerted efforts made by the government for the promotion of industrial activity in the district can least be seen in terms of the activity of the Uttar Pradesh State Industrial Development Corporation and Uttar Pradesh Financial Corporation and the establishment of the New Okhla Industrial Development Authority (NOIDA). Establishment of NOIDA with special facilities to entrepreneurs, a large number of industrial areas and estates developed by UPSIDC and proportionately very large financial assistance in a single district by UPFC, together suggest that the promotional efforts for industrialisation in Ghaziabad have been rather of a preferential and very concerted and concentrated nature.

- (6) No doubt in pure economic terms of the potential of earning surplus of revenue over cost, Ghaziabad provided advantage over average location in the State. This

advantage has been lost to a certain extent over the years. However, it should be pointed out that as a result of government policy most inputs today can be bought at a universal price, approved by the government. Thus the cost factor does not play as significant a role today as it did when such a policy was not in operation. On the other hand, it is the presence of a well developed market structure which is playing a decisive role in the location of industries between one place and another. It ensures easy availability of raw materials on the one hand and the sale of finished products on the other. Over the years Ghaziabad has developed its own market-network and the shortcomings, if any, are made good by the Delhi market the biggest in northern India.

Given similar economic advantage in terms of costs, it seems that certain non-economic factors like community life, education and attachment to native place etc., also play an important role in shaping entrepreneur's location decisions.

✓ The experience of Ghaziabad thus indicates that industrial development can be brought about more easily in a relatively less under-developed area as compared to a remote one. Moreover, it is not essential for industrialisation to be dependent on local resource based units :

In fact, it seems that a well linked process of industrialisation based on footloose industries utilising forward and backward linkages can be developed more effectively. Also promotional measures like special incentives and facilities, become more effective as providing additional inputs, only when some of the prerequisites of industrialisation are available and industrial growth has taken roots. ✓

INDUSTRIALIZATION OF GHAZIABAD DISTRICT :
A CASE STUDY

QUESTIONNAIRE

THE GIRI INSTITUTE OF DEVELOPMENT STUDIES
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Appendix - IINDUSTRIALIZATION OF GHAZIABAD DISTRICT
A CASE STUDY

QUESTIONNAIRE

I. Identification

1. Name and address of the unit _____

2. Year of establishment _____
3. Is unit registered under any authority? Yes No
If yes, _____
Name the authority of registration _____
Year of registration _____
4. Whether situated in an Industrial Estate Yes No
5. Entrepreneur
Age _____
Native Place _____
Education _____
Family Occupation _____
Previous work experience _____

II. Location

6. Factors in deciding location (Entrepreneur's assessment).

Entrepreneur belonged to the place	1
Industrial Estate	2
Finance at favoured terms	3
Raw materials locally available	4
Proximity to producers of intermediate products	5
Market Local Near	6
Better social and community life	7
Availability of skilled labour	8
Existence of similar units	9
Transport connections	10
Relatively cheap local labour	11
Motivated by fellow industrialists	12
Proximity to Delhi	

7. III. Capital Output and Employment

	First year of production	1971	1975	1979
LAND :	Area (Sq. yds)			
	Value, if owned			
	Rent, if hired			
BUILDING :	Area (sq. yds)			
	Value			
	Rent			
PLANT AND MACHINERY (Value)				
	No. of workers			
	Office workers			
	Production "			
EMPLOYMENT:	Skilled workers			
	Semi-skilled			
	Un-skilled			

	First year of production	1971	1975	1979
Total production				
Raw material used (Value)				
Wages & salaries : Total				
Wages				
Salaries				
Fuel and electricity used				
Other expenses				
Interest paid				
Gross profit				
Depreciation				
Transport charges				

8. IV. Procurement of Land and Building

A. Procurement of Land
and building :

Year of procurement

Purchased

Rented

Allotted

B. Acquisition of additional land for production purposes.

Did it pose problems so as to restrict expansion?

Did easy availability facilitate expansion?

Some idea of difficulties, price and rates - in recent acquisition over the original acquisition.

9.

V. Procurement of Raw Materials

A. Procurement of raw materials and intermediate products (last year).

Raw material	Purchased at	Produced at	Amount	Value
--------------	-----------------	----------------	--------	-------

B. Supply situation over the period?

Supply situation over the period?

10. Are there any regular arrangements for purchase of raw materials and/or intermediate products with any supplier.

Yes No

If yes,

- A. Since when _____

B. Earlier arrangement discontinued

C.

Name of the Unit	Location	Material/ product	% of require- ment procured through this arrangement
1.			
2.			
3.			

VI. Sales Arrangements

SALE:

11. A. Where does your output sell mostly? Local
Delhi
Out-side

B. Where was the sale made five years' ago
Local
Delhi
out-side

12. A. If you are producing any intermediate products, who buys them.
Local
Delhi
Out-side

B. Where was the sale made five years' ago.
Local
Delhi
Out-side

13. Do you have any regular arrangement with any unit(s) for supplying intermediate products?

Yes No

If yes,

A. Since when _____

B. Earlier arrangement discontinued _____

C. _____

Name of the Unit	Location	Material/ product	% of sale through this arrangement
1.			
2.			
3.			

VII. Contribution of the Unit in Area Development

14. In which way do you think your unit helped in the development of the area/district (Give Ranking).

Employment of local persons*

1

Using local material

2

Supplying intermediate products to other local units

3

Supplying consumption goods to local population

4

Inducement to the growth of other activities (specify)

5

* Total employment

Local workers
(within the district)

15. Details of borrowing from bank/institutions/private

Purpose of Loan	Institution	Borrowing at the time of Establishment	Amount	Interest rate plus period of repayment	Scheme, if some concessional arrangement
1. Land					
2. Building					
3. Plant and machinery					
4. Working capital					
5.					
6.					
7.					

16. Facilities and Incentives Availed

Time of availment
on establish-
ment Later

1. Developed plots, sheds, road and electrical lines
2. Hire purchase scheme for equipments
3. Lower charges in procuring equipments
4. Technical assistance and consultancy
5. Assistance in procuring raw-material
6. Central capital subsidy
7. Capital participation
8. Equity participation
9. Underwriting of shares
10. Export finance
11. Credit guarantee scheme
12. Term loan
13. Concession in electricity tariff
14. Exemption from electricity duty
15. Exemption from octroi duty
16. Income tax rebate
17. Marketing assistance
18. Price preference
19. Exemption from sales tax
20. Training

IX. Expansion and Diversification of Unit

17. If the unit was started only during the last 10 years, or there has been a major expansion in capacity during the period, what was the major motivating facilitating for starting/expansion of the unit.

- | | | |
|--------------------------------------|-------|---|
| 1. Land | _____ | 1 |
| 2. Plant and machinery | _____ | 2 |
| 3. Raw material | _____ | 3 |
| (a) From other units | _____ | |
| 4. Demand : (b) From final consumers | _____ | 4 |
| 5. Finance | _____ | 5 |

18. Have you started any other unit Yes No

If yes,

- A. Whether situated at Ghaziabad
- B. Producing the same/intermediate product or different product

19. Please give your comments on the speedy industrialization of Ghaziabad district.

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